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AN ANALYSIS OF FACTORS AFFECTING PER PUPIL COSTS
OF INSTRUCTIONAL SUPPLIES IN SELECTED ALBERTA
SCHOOL SYSTEMS

by

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A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "An Analysis of Factors Affecting Per Pupil Costs of Instructional Supplies in Selected Alberta School Systems" submitted by Bryant L. Stringham in partial fulfilment of the requirements for the degree of Master of Education.

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ABSTRACT

This investigation sought to discover whether relationships exist between costs and certain variables hypothesized as correlates of per pupil costs of instructional supplies in selected Alberta school systems. Scope of program measured in terms of credits taught in high schools, the quality of the procurement function, and the size of the school unit were the independent variables that were studied.

To determine the quality of the procurement function, an instrument patterned after one developed by Brock was constructed and later completed by purchasing officials in the districts studied. Cost figures, credits taught and size of school unit were obtained from Department of Education records.

It was found that:

1. The instrument may be a useful guide to districts in assessing their procurement practices.

2. The legal position of many purchasing agents was not clearly defined.

3. Buying on bids was not practical universally.

4. Widespread interests in cooperative purchasing was reported.

5. Widespread interest in a governmental agency to test materials, develop specification and recommend sources of supply was reported.

6. Costs were only randomly associated with the independent variables studied.

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

I. THE PROBLEM

Statement of the problem. It was the purpose of this study to discover whether relationships exist between costs and certain variables hypothesized as correlates of per pupil costs of instructional supplies in selected Alberta school systems. The independent variables chosen for study were: (1) the scope of program in the high school, as measured by credits, (2) the quality of the procurement function, measured as a score on the questionnaire in Appendix C, and (3) the size of school unit, measured by enrollment.

Sub-problem I. What relationship exists between cost per pupil in average daily attendance in instructional supplies and scope of the high school program as measured by average number of credits offered?

Sub-problem II. What relationship exists between cost per pupil in average daily attendance of instructional supplies and quality of the procurement function as measured against procedures recommended in the literature?

Sub-problem III. What relationship exists between cost per pupil in average daily attendance of instructional

supplies and size of the school system as measured by enrollment?

Hypotheses. The cost per pupil in average daily attendance of instructional supplies varies directly as the scope of the high school program and inversely as (1) the size of the district, and (2) quality of the procurement function.

Operational definition. The cost of instructional supplies per pupil in average daily attendance used as the dependent variable in this study yields a cost figure corrected for varying enrollments and attendance. Its determination is fully explained in Chapter II. The data necessary to effect the calculation for Alberta school systems were obtained from the Department of Education. These data were subject to the following limitations: (1) it could not be established that the figure obtained for instructional costs included the same items from one school district to another, and (2) rural points may have included greater amounts for transportation of supplies than did urban centers.

No way of controlling for the first limitation was apparent. As a result, the figures reported to the Department were accepted as the actual costs of instructional supplies.

In an attempt to control for the second limitation, the representatives of each school system participating in the study were asked to calculate the percentage of instructional supply costs that was required for transportation of supplies from the supplier to the system warehouse. The percentage of costs for extra transportation so obtained was used to adjust the costs per pupil in average daily attendance so that the costs figure used for comparison purposes reflected as closely as possible the same basic information regarding each system studied.

The scope of program offered in each system was measured by determining the mean number of credits offered in the high schools of the systems studied. In general, elementary programs do not differ greatly throughout the province. In areas where programs in the elementary schools have been enriched, it seemed logical to assume that Junior High School and High School programs are similarly more comprehensive. No judgment of the quality of program was implied. It was simply the extent of programs that was of interest in this study. Since credits reflect the scope of program being offered, it appeared valid to use average number of credits taught in high schools as a measure of the scope of the program.

Downey measured scope of program in this manner.¹

Enrollment figures, obtained from Department of Education records, formed the index of size of system in the study.

Determination of the quality of the procurement function formed a major part of the study. The instrument developed and validated by Brock in 1964 at Indiana University has an American bias that limits its usefulness in Canada.² However, by using the same basic structure with adaptations suggested by other authors, an instrument was constructed. An examination by several purchasing officers was conducted to establish its validity and reliability. The score made by a school district on the instrument was used to measure the quality of the procurement function.

The hypothesized relationships were conceptualized in the following way:

$$\text{COST} \propto \frac{\text{SCOPE OF PROGRAM}}{\text{SIZE X QUALITY OF PROCUREMENT FUNCTION}}$$

¹Lawrence W. Downey, The Small High School in Alberta, (Edmonton: The Alberta School Trustees Assoc., 1965.) p. 38.

²Dale Eastes Brock, "Survey Instrument for Evaluation of the Economic-Efficiency of Public School Purchasing," (Unpublished Doctoral Dissertation, Indiana University, Bloomington, Indiana, 1964.)

Individually they were: (1) per pupil costs vary directly with scope of program, (2) size of district is inversely related to costs per pupil, (3) quality of the procurement function as measured by total score on the instrument is inversely related to costs per pupil.

Importance of the study. Jordan and Brock state:

Increasing pressure on the tax dollar and mounting demands for additional quality features in the educational program coupled with expanding school enrollments emphasize the necessity for public school administrators to take a critical look at their entire operation and to devote their efforts toward raising the level of the educational program with a minimum increase in school revenues.³

The relationship between school size and program offering was a subject of concern in Downey's investigation of the small high school in Alberta.⁴ His definition of the optimum-sized high school used as one criterion the concept of program offering in terms of credits. Two implications of the study were: (1) more extensive programs are needed, and (2) increased size of operating units must be effected. As these recommendations are implemented, changes in per pupil costs of instructional supplies may occur. Extended programs may increase per pupil costs of

³K. Forbis Jordan and Dale E. Brock, "Principles of Public School Purchasing," American School Board Journal, 149: 13-14, August, 1964.

⁴Downey, op. cit., p. 58.

supplies. Increased size of purchasing units may permit more economical purchasing. Since changes such as these now face many school boards in Alberta, an analysis of related factors was deemed to be of importance.

Tonigan, Plant Manager of Teachers' College, Columbia University, says that prudent purchasing can save one to two per cent of total costs of operation per year.⁵ McPherran of the California State Education Department suggests that a potential saving of one per cent can be realized through improved procurement activities.⁶ These statements seemed applicable to the Alberta scene where educational costs now exceed \$180,000,000.00 yearly.⁷ A potential saving of \$3,600,000.00 bears investigation.

Assumptions. It was assumed, on the basis of the writer's experience, that information regarding school purchasing is not readily available to school district procurement officers in Alberta.

⁵Richard F. Tonigan, "Ten Principles for a Good Purchasing Program," American School and University, 37:60 ff., March, 1965.

⁶Archie L. McPherran, "School Purchasing Procedures," California Education, 1:9, May, 1964. pp. 23-25.

⁷This figure was confirmed as the estimated expenditure for 1966 of all school boards in the Province by the Division of School Administration, Department of Education.

Accurate responses to the items in the instrument, correct figures in the financial statement to the Department of Education with consensus among Secretary/Treasurers as to the meaning of "Instructional Supplies" were other pertinent assumptions.

Delimitations. School systems within and adjacent to the cities of Lethbridge and Edmonton comprised the sample chosen for study.

Limitations. It was recognized that a larger sample would increase the usefulness of the study.

If a breakdown of the entries in the financial statements of the boards studied had been available, the cost analysis section of the study may have yielded more significant results.

It must be remembered that this study attempted to correlate three independent variables with a rough measure of unit costs of supplies. Although they are of crucial importance to the educational enterprise, no consideration of relationships with total costs of operation or costs of instructional salaries or physical facilities was undertaken. Therefore, no implications with respect to optimum size of school system or optimum scope of program offered were drawn on the basis of this study.

This study would have been more meaningful if a way to correct cost figures for effects of distribution of supplies within districts could have been found. The problem was seen as follows: urban districts transport many items for many students over short distances while rural districts transport few items for few students over great distances. The costs of internal distribution were not available and because many supplies were delivered in informal ways, an accurate determination of these costs was deemed impossible.

II. DEFINITION OF TERMS

Principal. When used in the legal sense, as in Chapter II, Part I, the principal refers to the school board, the employer.

Estoppel. The prevention of a person from making an affirmation or denial because it is contrary to a previous affirmation or denial that he has made.

Procurement. All of the activities performed from the time a request for an item is initiated until the invoice for it is approved and paid or the request for acquisition is denied or withdrawn.

Instructional supplies. As used in this study, instructional supplies constitutes those items purchased

by Alberta School Boards and reported as Instructional Supplies in the Auditor's Financial Statement, Form EG-23-1700, Department of Education.

Supplies and Equipment. (as defined in the literature. These meanings are not necessarily the ones used in the procurement offices of the districts studied.)

A supply item is any article or material which meets any one or more of the following conditions:

1. It is consumed in use.
2. It loses its original shape or appearance with use.
3. It is expendable. That is, if the article is damaged or some of its parts are lost or worn out, it is usually more feasible to replace it with an entirely new unit rather than repair it.
4. It is an inexpensive item having characteristics of equipment whose small unit cost makes it inadvisable to capitalize the item.
5. It loses its identity through incorporation into a different or more complex unit or substance.

An equipment item is an immovable or fixed unit of furniture or furnishings, an instrument, a machine, an apparatus or a set of articles which meets all of the following conditions:

1. It retains its original shape and appearance with use.
2. It is non-expendable, that is, if the article is damaged or some of its parts are lost or worn out, it is usually more feasible to repair it rather than replace it with an entirely new unit.
3. It represents an investment of money which makes it feasible and advisable to capitalize the item.
4. It does not lose its identity through incorporation into a different or more complex unit or substance.⁸

⁸Stephen J. Knezevich and John Guy Fowlkes, Business Management of Local School Systems, (New York: Harper and Brothers, 1960.) pp. 63-64, citing Bulletin 1957, no. 4, U.S. Office of Education, Washington, D.C.: U.S. Government Printing Office, 1957, p. 191.

Standardized supply list. This term refers to a compilation of items deemed appropriate and essential in the instructional program from which teachers and principals order supplies.

Specifications. A description of supplies or services setting forth in a clear and concise manner the characteristics of the item to be purchased and the conditions under which the purchase will be made.

Standardized order form. A form used by a person or department to order those supplies which are maintained in stock at the district warehouse.

Requisition. The requisition is a formal written request on a uniform form from a person or department in the school system for the purchase of supplies or equipment that is not listed on the standardized order form.

Purchase order. The purchase order is a document drawn by the procurement office which authorizes a vendor (seller) to deliver described merchandise or material at a specified price. When accepted by the vendor, the purchase order becomes a contract.

Cooperative purchasing. This term refers to the purchasing of materials or merchandise carried out jointly by two or more school districts.

III. SUMMARY

The prospect of additional cost often limits extension of the educational program although a real desire for change may exist. If the hypothesis examined here were supported, evidence could be shown that instructional costs may be controlled to some extent by increasing the size of the population that a procurement office serves as well as improving the quality of the purchasing practices. To the extent that savings can be effected by these methods, extension of program may be implemented without a change in per pupil costs of instructional supplies. To the extent that purchasing practices can be improved with no expansion of program, absolute savings can also be achieved.

CHAPTER II

REVIEW OF THE LITERATURE

I. LEGAL INFLUENCES IN PURCHASING

The legal principles expressed here are drawn largely from two sources: (1) Aljian, Purchasing Handbook,¹ and, (2) Cheshire and Fifoot, The Law of Contract.² The content of this section has been approved as legally correct by R. A. Lundrigan, LL.B., Edmonton.

A. Purchasing and the Law of Agency

Since any person who purchases for the board of a school district is acting as an agent of the board, it is important that the legal relationship between the board and purchasing personnel be made explicit.

1. Definition of agency.

Agency is a comprehensive word which is used to describe the relationship that arises where one man is appointed to act as the representative of another.

Regarded from this aspect, an agency agreement is one by which the agent is authorized to establish ... contracts between his employer, called the principal, and a third party. It

¹George W. Aljian (ed.) Purchasing Handbook, (New York: McGraw-Hill Book Company, Inc., 1958.) p. 4-1.

²G. C. Cheshire and C.H.S. Fifoot, The Law of Contract. (London: Butterworth and Co., 1956.)

produces effects of two quite different kinds.

First, it creates an obligation between the principal and the agent, under which each acquires in regard to the other certain rights and liabilities.

Secondly, when acted upon by the agent, it leads to the creation of ... contracts between the principal and the third party. A contract made with a third party by the agent in the exercise of his authority is enforceable both by and against the principal. Thus the English doctrine is that an agent may make a contract for his principal which has the same consequences as if the latter had made it himself. In other words the general rule is, not only that the principal acquires rights and liabilities, but also that the agent drops out and ceases to be a party to the contract.³

2. Formation of agency.

There are a number of ways by which agency can be created, four of which are pertinent to purchasing personnel.

(a) Agency by express appointment.

Although an oral appointment is sufficient to create agency expressly, it is desirable to have the employment and contractual relationship spelled out as a protection and safeguard to both the purchasing agent and his employer. In addition to having these relationships recorded in the board minutes, a formal, dated letter of appointment specifying the terms of employment and performance is an important safeguard.

³Ibid., pp. 381-382.

Whenever the authority of the agent is to be exactly prescribed, restricted or limited, it is best to reduce the agreement of authority to writing. To avoid having the courts rule on the extent of authority possessed by an agent, the written instrument should clearly state that the writing contains the whole agreement and is not to be interpreted to imply more or less than stated. The protection rendered both the agent and the principal or employer under such an agreement is great. If, for instance, the power to delegate responsibility to a subordinate is not stated in the instrument which gives an express appointment, then the authority does not exist and subordinates who sign purchase orders, hire, discharge employees, or perform any other act that has been assigned to the agent, do so without authority. But if the express appointment is not sufficiently broad, an agent may be unduly hampered and be ineffective in the performance of his function. The ideal arrangement may be to specify limits expressly and leave enough freedom that judgment may be exercised.

(b) Agency by ratification.

Agency by ratification is that agency which a third party may be led to believe an agent possesses because of the words or conduct of the principal. When the principal honors an order submitted on behalf of

himself by a person who was unauthorized to act for him, agency by ratification is created which is sufficient to bind the employer to all future agreements, even if unauthorized, that the possessor of agency by ratification makes. An employer's safeguard against chaotic extension of agency by ratification is to avoid honoring agreements made by unauthorized personnel and in the event that an exception is made, to immediately notify the vendor or vendors that although an unauthorized contract is being honored now, the person who placed the order is not an agent and his orders will not be honored in the future.

(c) Agency by estoppel.

In general, a person cannot be bound as principal by a contract made without his authority. However, if the proved result of the principal's conduct is that a certain person appears to be his agent and makes a contract with a third person who relies on the appearance that has been created by the principal, the principal will be required to honor the contract. An apparent agency is as effective as an agency deliberately created. Appearance and reality are one in the eyes of the law.

Consider the following example. When a discharged purchasing agent fraudulently continues to order from a supplier who was not notified by the employer of the agent's

dismissal, a valid contact exists and the employer is required to honor all commitments made by the dismissed agent. The former employee retains agency by estoppel, i.e., his employer is estopped from denying that agency has been removed when he had sufficient opportunity to make the fact known before the incident which he protests occurred. Employers must inform vendors of changes in purchasing personnel to prevent action of the type described.

(d) Agency of necessity.

When, in the best judgment of the agent, a matter of urgent necessity arises, the agent may bind his principal without receiving specific authority to do so. For example, if in September it was discovered that a school was short twenty desks, and no extra desks were available in the district, and the board could not meet for some time, there seems to be reasonable grounds to assume that an emergency exists. If the purchasing agent is convinced that the need is great enough, he may enter into bona fide contracts that are in the best interest of his principal and order desks without receiving specific authorization to do so. This doctrine which the courts are reluctant to extend, probably applies only where there is already some existing contractual relationship between the principal and the person who acts on his

behalf. Boards are bound by such necessary action.

B. Legal Duties of Agents

1. To follow the instructions of his principal.

Failure to do so constitutes breach of contract and is grounds for dismissal. He must not exceed the limits of any authority granted him but he has a right to know what those limits are. In the absence of written or specific expression of authority granted him, the following statement represents a fair appraisal of his commission:

To purchase in the usual manner for his company; to solicit offers to sell, enter into negotiations to obtain the best price and terms for his employer as well as the best value; to complete the contract to purchase in the usual and customary form; and at all times to act in the best interest⁴ of his employer in any and all circumstances.

2. An agent is obliged to be loyal to his principal.

He is not secretly to represent conflicting interests in his negotiations but devote himself exclusively to the welfare of his employer. An agent who has a direct or indirect financial interest in any company that is a potential or actual supplier to his principal is representing conflicting interests when he contracts with that company and is open to censure or dismissal unless he has

⁴Aljian, op. cit., p. 4-5.

made full disclosure to his principal and secured approval beforehand.

The agent is expected to keep confidential those aspects of the employer's business that the employer wishes to be kept confidential.

3. An agent has a duty to seek out information relative to his function and report to his employer all pertinent facts that he discovers while acting as agent.

4. A purchasing agent should disclose to vendors the extent of his authority in making purchases.

C. Legal Liabilities of Purchasing Officials

The agent is expected to consistently act in a legal manner as are all citizens.

The purchasing agent is personally responsible to the board for the conduct of the purchasing office. This does not imply that the agent must insure his principal against all losses occasioned by the commission of errors and mistakes of judgment. He has the responsibility to act using ordinary care and exercising reasonable prudence. Acting in that manner generally relieves him from responsibility and liability.

Errors made by other personnel in the purchasing department are subject to the same judgment. Action that is reasonably prudent and careful relieves all employees

from responsibility and liability for honest mistakes and errors. An employer's major safeguard against costly errors is insistence on proper qualifications for all purchasing personnel.

A board must carefully specify its policy with respect to signing power. Any signature, to be valid, must (a) be a signature that has been properly authorized by the board or its agent, and (b) be intended by the signer as a legally binding signature. Typewritten, rubber-stamped, preprinted and teletyped signatures can all be considered valid signatures that bind the principal.

If a purchasing agent acts with reasonable care under all circumstances, no contractual liability can arise between him and his employer, i.e., he cannot be dismissed for breach of contract. If he acts only within the scope of his authority and makes adequate disclosure of his agency to suppliers and third parties, no liability arises between him and them in relation to his acts as an agent.

When an employer is forced to honor a contract negotiated by the purchasing agent that was not within the scope of his authority (i.e. when the third party believed the agent had authority to bind his board) his employer may hold the purchasing agent liable for any

loss sustained.

A purchasing agent may be held personally liable under contract if he does not have express authority to bind his board and the supplier does not believe the agent has authority and so informs the agent. The agent then is in the position of having contracted for himself and must accept the liability involved. The fact that he represented himself as negotiating for his principal does not lessen his liability because he had no authority to do so. It should be noted that ratification of such a contract by the board will remove the agent's liability.

An agent is expected to assume responsibility for proven negligent acts. However, negligence occurring in the performance of official duty as purchasing agent can also be imputed to the employer. The courts apportion the amount of liability of employer and employee in such cases.

An agent who commits a criminal offence is subject to the penalties specified under law and must bear the consequences personally. An employer is not held responsible for individual criminal acts. When an agent unintentionally violates a so-called regulatory law in the performance of his official duties, courts usually hold the employer responsible for the act. However, the employees may be judged by the courts to be liable as

well as the employer in these cases.

D. Contracts

Since a purchase order properly executed constitutes a contract, the nature of contracts must be known by the purchasing agent.

1. A valid contract, offer and acceptance.

To constitute a valid contract, an agreement must include a valid offer and a valid acceptance. In relation to the school procurement function, offer and acceptance can be viewed in two ways. An order can be either an offer or an acceptance. When a salesman is fully empowered to represent his company in all transactions, he may offer to sell goods to the school purchasing officials. An order placed with such a salesman therefore constitutes an acceptance and a valid contract exists from the time the order is duly signed. However, if the salesman is simply empowered to solicit orders for his firm and is not authorized to bind his company, an order placed with him is an offer and becomes a contract only when an acceptance is received from the company office. It is essential to realize that an acceptance must be received in the same form of communication as the offer was communicated. Thus if an offer is transmitted through the mails, the acceptance, to be valid, must likewise be

transmitted through the mails. However, in practice, many offers print on them that acceptance by telephone call or wire will be honored. In that case, the contract is valid even if a different means of communication is used in the acceptance.

It may be readily observed that it becomes important for the purchasing officials to know the type of authority salesmen have. If there is any doubt, it is well to contact the office of the company for confirmation of the status of the salesmen that represent them.

2. Cancellation of offer.

An offer may be cancelled at any time prior to receiving an acceptance. Also, if an acceptance is received in a form other than that in which the offer was given and if an alternative means of receiving the acceptance was not specified on the offer, the offer may be withdrawn. For instance, if a school district ordered a two year supply of cleaning material by mail and acceptance of the order was received by telephone when the order said that acceptance by wire was acceptable, and if then the district discovered that there was sufficient of the material already on hand, the offer could be withdrawn. The district would be required to restore the goods to their original position (if shipment had proceeded) but the courts would not require the

district to pay for the material. Had acceptance been communicated as specified or in the same form as the offer was communicated, liability would have been incurred by the board.

To avoid litigation, it is recommended that purchase order forms and procedures be approved by legal counsel before use.

3. Responsibility of parties to a contract.

Both parties are expected to know completely the content of any document they sign. A plea of not understanding meaning is no defense.

The Sale of Goods Act details certain considerations that purchasing officials should know.⁵ Contracts may be declared valid even if they are entered into by word of mouth, partly in writing and partly by word of mouth or completely in writing. As long as the intent is clear to both parties at the time the contract is negotiated and the facts can be proven either by witnesses or by the actions of the parties involved, the contract holds.

4. Property transfer.

Property transfer occurs when the parties involved in the contract intend it to transfer. Particularly, this means that property transfer usually occurs at the

⁵The Sale of Goods Act, (R.S.A. chpt. 295, 1958).

time the contract is made. If the goods must be put into deliverable condition, be weighed, tested, repaired or have anything done to them, property transfer occurs when the operation is complete. When goods are shipped "on approval" or other such term that implies a similar meaning, property transfer occurs when the buyer signifies acceptance of the goods. In case he does not signify acceptance, property transfers when a reasonable time elapses. What constitutes a reasonable time is open to question and must be settled in the courts with respect to any individual case.

5. Risk.

Goods remain at the sellers risk until the property therein is transferred, but when the property is transferred, goods are at the buyers risk whether delivery has been made or not. It is therefore essential that purchasing agents make sure that carriers of goods they purchase are properly bonded and insured so that the district will not experience loss or damage of goods in transit for in general, the risk involved is legally the responsibility of the purchaser.⁶

Hodges suggests that merchandise shipped F.O.B., the

⁶P. S. Atiyah, The Sale of Goods. (London: Sir Isaac Pitman and Sons, Ltd., 1957.) p. 94.

buyers place of business, remains the responsibility of the supplier until delivery is made.⁷ In that case, claims for damage may be made to the supplier who will negotiate such claim with the carrier.

6. Conditions and warranties.

Atiyah defines conditions and warranties as follows:

In its usual meaning a condition is ... of such vital importance that it goes to the root of the transaction. The importance of a condition in contracts for the sale of goods is that its breach, if committed by the seller, may give the buyer the right to reject the goods completely and to decline to pay the price, or if he has already paid it, to recover it.

The term warranty is defined as an agreement with reference to goods which are the subject of a contract of sale, ... the breach of which gives rise to a claim for damages but not to a right to reject the goods and treat the contract as repudiated.⁸

From the above quotation it is readily observed that purchasing personnel should ascertain fully the conditions under which a purchase is being made. Sometimes warranties are confused with conditions so that inspection of the goods on arrival leads the purchaser to believe that breach of condition has occurred when in

⁷Henry G. Hodges, Procurement, (New York: Harper and Brothers, Publishers, 1961.) pp. 330-332.

⁸Atiyah, op. cit., pp. 34-35.

fact breach of warranty only may have occurred. Efforts to have goods replaced under such circumstances will probably fail. Even if a company does replace or reimburse the purchaser for unsatisfactory performance, it must be realized that the act is probably being done to establish good will for the company and that no legal claim can be made. This points up the difficulty that can be experienced with warranties, either written or implied. Hodges suggests that all warranties are "fraught with pitfalls" and recommends that legal counsel be sought early when difficulty is anticipated or experienced with vendors who change the terms of their warranties.⁹

E. Payment Procedure

Section 167 of the School Act, as interpreted by accountants in the Division of School Administration, implies that specific authority must be secured from the board before payment is made.¹⁰ In practice, certain small recurring purchases are pre-authorized by the board to be handled through a petty cash account. To ensure that proper handling of these funds is continuous, periodic audits are required by law. Auditing principles,

⁹Hodges, op. cit., p. 334.

¹⁰The School Act (Chpt. 95, R.S.A., 1955).

therefore, establish procedures that are binding in that the courts, in cases of dispute, tend to accept recommendations made by auditors.

F. Tax Exemptions

The Canadian Excise Tax Act details conditions under which school boards may recover from the government an amount of money equal to the sales tax paid for purchases.¹¹ Any materials used in the construction of school buildings and most of the supplies and equipment used in schools as listed under Schedule III of the Excise Tax Act are exempt.

II. SCHOOL BOARD POLICY

According to Bargaen:

School boards are agencies of the province, and within the framework of delegated authority act as local legislatures in educational matters.

Policies formulated by such boards have the force of law and constitute part of the legal framework within which schools operate. Unless there is evidence of bad faith, the courts will not interfere with the discretionary powers granted to local boards.¹²

Section 173 of the School Act requires the board to administer educational matters in the area of its

¹¹Excise Tax Act, (R.S.C. 1952, c. 100) Section 47, Schedule III, Ottawa: Dept. of National Revenue, 1963.

¹²Peter F. Bargaen, The Legal Status of the Canadian Public School Pupil, (Toronto: Macmillan, 1961.)p. 10.

jurisdiction.¹³ Aljian suggests that the administrative function can best be fulfilled by formulating policies that reflect the wishes of the administration.¹⁴

Procurement policies, then, are the immediate framework under which purchasing personnel operate most effectively.

Knezevich and Fowlkes suggest that all buying be coordinated by an executive officer of the district and not through individual board members or employees at large. Depending on the size of the district, assistants may be required. To expedite purchasing, it is recommended that proposed purchases, properly described and justified, that are approved when the budget is accepted need not be re-approved during the course of the year. Initial approval of these items (just as pre-approval of the petty cash system is permissible) is sufficient authorization under law to proceed with the purchase. A proper method of encumbering the budget as approved by local legal counsel and the auditors for such proposed purchases will fulfill the control function that the re-approval procedure is designed to effect. Extra-budgetary purchases, (i.e., requests for items that are received after the budget has been adopted) must be

¹³The School Act, op. cit., Sec. 173.

¹⁴Aljian, op. cit., Sec. 3.

approved by the board prior to execution.¹⁵

It is suggested that legal expectations be met by formally appointing a procurement officer with express agency. Limits of his authority need to be specified. Such matters as statements regarding the acceptance of gifts or discounts and other matters of ethical relationship to the employer are proper subjects for board policy.

In addition, Taylor suggests that board policy be specific with regard to actual purchasing procedures.¹⁶ For example, policy statements regarding procedures for determining requirements, establishing standards, selecting sources of supply, processing orders, receiving, inspecting, testing and paying for supplies as well as matters of organization and personnel should be specified. The thesis by Dale Eastes Brock¹⁷ also supports this view

¹⁵Stephen J. Knezevich and John Guy Fowlkes, Business Management of Local School Systems, (New York: Harper and Brothers, 1960.)p. 70.

¹⁶L. V. Taylor, "A Check List for Better School Purchasing," American School Board Journal, June, 1961. pp. 28-31.

¹⁷Dale Eastes Brock, Ed. D. "Survey Instrument for Evaluation of the Economic-efficiency of Public School Purchasing," (unpublished Doctoral dissertation, Indiana University, Bloomington, Indiana, 1964.)

as does Hayes and Renard,¹⁸ and Aljian.¹⁹

Casey suggests that districts of medium size and larger will be well advised to formally appoint a school district purchasing agent with the following as his explicit duties.

1. Seeks to standardize materials as far as is practical;
2. Maintains a list of sources for materials;
3. Prepares and maintains specifications;
4. Issues purchase orders;
5. Secures quotations or bids for large purchases;
6. Awards or recommends award of purchase contracts;
7. Tests products for compliance with requirements;
8. Expedites the delivery of purchases;
9. Seeks new products that will perform more advantageously;
10. Participates in the approval of vendor's claims;
11. Supervises handling, storing, and issuing of materials (if a stores operation is maintained);
12. Supervises clerical staff involved in purchasing.²⁰

Fensch and Wilson specify the following desirable qualifications for the purchasing agent. He should have some knowledge of the educational enterprise so that educational goals will guide his recommendations and decisions. He should be competent in utilizing testing

¹⁸F. Albert Hayes and George A. Renard, Evaluating Purchase Performance, (New York: American Management Assoc., 1964.) pp. 19-29.

¹⁹Aljian, loc. cit.

²⁰Leo M. Casey, School Business Administration, (New York: The Center for Applied Research in Education, Inc., 1964.) p. 55.

techniques and information. He ought to be an administrator who can organize his department efficiently without creating an inflexible bureaucracy. He must be able to create a system for assembling annual needs, for emergency purchases, and for obtaining the infrequent large items which a school system must have. He needs to have an understanding of commercial transportation facilities and regulations, business law, basic accounting and inventory procedures. He should be diplomatic in his relations with vendors, other employees and the public for his is a visible job that reflects the image of the total organization.²¹ Specific training in school business management is now available and, according to Casey, school systems providing for two thousand or more pupils can benefit by hiring such a specialist.²²

Principles of sound purchasing procedures.

McPherran suggests that the following are recognized principles of sound purchasing procedures.

1. Accomplish a definite objective in the shortest, easiest manner consistent with accuracy and efficiency.

²¹Edwin A. Fensch and Robert E. Wilson, The Superintendency Team, (Columbus, Ohio: Charles E. Merrill Books, Inc., 1964.) pp. 218-219.

²²Casey, op. cit., p. 9.

2. Provide simplicity to speed up operations and reduce the possibilities of error.
3. Establish procedures that are definite and understandable to obviate friction, duplication and confusion.
4. Fix responsibility for each step of performance.
5. Establish procedures that are sufficiently elastic to allow for expansion as the district grows.
6. Provide a system of procurement that is as inexpensive as is consistent with the job to be done.
7. Ensure that the system is adequate to perform with satisfaction the task for which it was created.²³

Throughout the procedures that are developed below, these principles apply. The seventh is re-emphasized by Tonigan when he says "we must constantly reappraise the purchasing function and purchasing needs."²⁴ A tendency to become inflexible is inherent in local institutional management. Therefore the need for continuous review, trial of new techniques and emphasis on the educational objectives behind all purchases, as personnel consistently remain alert to possible savings and elimination of middlemen, are objectives to be pursued. Hayes and Renard discuss the improved efficiency that has been incorporated in many organizations when a systematic and precise examination of the procurement function is

²³Archie L. McPherran, "School Purchasing Procedures," California Education, 1:9, May, 1964. pp. 23-25.

²⁴Dr. Richard F. Tonigan, "Ten Principles for a Good Purchasing Program," American School and University, 37:7, March, 1965. p. 60.

followed by revised purchasing organization and techniques.²⁵ Farmer similarly stresses the importance of continuous evaluation. In virtually every organization, analysis by participants can reveal ways to eliminate waste.²⁶ It is possible that continuing acceptance of long established plans leads to inefficiency of the type reported by Johns and Morphet when they say that "savings up to thirty per cent are reported" through adoption of improved purchasing practices.²⁷

In connection with sound purchasing practices, a code of ethics for purchasing is often mentioned. Several codes are listed by Aljian, all of them containing elements similar to the code adopted by the New York State Association of School Business Officials which follows.²⁸

1. To consider first the interests of the school district and the betterment of its educational program.
2. To endeavor to obtain the greatest value for every dollar expended.
3. To be receptive to advice and suggestions from

²⁵Hayes and Renard, op. cit., p. 11.

²⁶Samuel C. Farmer, "The Case for Analysis," Guide to More Effective Purchasing. (New York: American Management Association, Inc., 1962.) pp. 7-11.

²⁷R. L. Johns and E. L. Morphet (eds.), Problems and Issues in Public School Finance. (New York: Teachers' College, Columbia University, 1952.) pp. 454-463.

²⁸Aljian, op. cit., Sec. 6.

colleagues, both in the educational field and in other departments of business administration, insofar as such advice and suggestions are not in conflict with legal or moral restrictions in purchasing procedures.

4. To strive for knowledge of school equipment and supplies in order to recommend items that may either reduce cost or increase efficiency of the means of education.

5. To insist on and expect honesty in sales representations whether offered verbally or in writing, through the medium of advertising or in the sample of a product submitted.

6. To give all responsible bidders equal consideration and the assurance of unbiased judgment in determining whether their product meets specifications and the educational needs of the district.

7. To discourage the offer of, and to decline, gifts which in any way might influence the purchase of school equipment and supplies.

8. To accord a prompt and courteous reception, insofar as conditions permit, to all who call on legitimate business missions.

9. To counsel and assist fellow school purchasing officials in the performance of their duties whenever occasion permits.

10. To cooperate with education, governmental and trade associations in the promotion and development of sound business methods in the procurement of school equipment and supplies.²⁹

Casey³⁰ and Linn³¹ also discuss codes.

III. PURCHASING PROCEDURES

Procedures for determining requirements and establishing standards. Casey suggests that the ultimate

²⁹Purchases and Stores, School Business Management Handbook No. V, (Albany, New York: The University of the State of New York and the State Education Department, 1955.) pp. 55-56.

³⁰Casey, op. cit., p. 55.

³¹Henry H. Linn, School Business Administration, (New York: The Ronald Press Company, 1956.) pp. 65-66.

test of a purchase or purchasing procedure resides in its value to the school district. Value can be ascertained with respect to any single purchase or procedure by answering the following questions in relation to it.³²

1. Is the quality satisfactory? Does it meet the minimum quality for the job to be done.³³
2. Is the unit being purchased in advantageous quantity? Since small orders frequently have high hidden costs and large orders may create impossible strains on the storing and distribution functions, an economical harmony between the two positions must be found.³⁴
3. Is the purchase being sought at the right time? Since about three fourths of all school buying is done in April, May and June, boards placing orders in other months are given discounts.^{35 36 37 38}

³²Ibid., p. 254.

³³Henry H. Linn, Practical School Economies, (New York: Teachers' College, Columbia University, 1934.) p. 83.

³⁴Casey, loc. cit.

³⁵Linn, op. cit., 1934. pp. 81-82.

³⁶Chris A. DeYoung, Budgeting in Public Schools, (Chicago: John S. Swift Co., Inc., 1964.) p. 396.

³⁷Ward G. Reeder, The Fundamentals of Public School Administration, (New York: The Macmillan Co., 1958.) p. 318.

4. Will the material be available when needed?

The right material at the right price and quantity for the purpose needed at the right time is the ultimate measure of the effectiveness of the procurement function.³⁹

Casey and Linn suggest that selection of supplies and equipment should start with the staff member who will eventually use the product.⁴⁰ His request then will be reviewed and approved by his immediate line supervisor and so on up the line, with the superintendent being ultimately responsible to approve all requests, although he may delegate this function.⁴¹ Upon receiving final approval, the order is passed to the purchasing agent who makes the purchase.

To facilitate efficient and effective supply management, Aljian⁴² and Linn⁴³ suggest that standardization of all supplies is essential. Casey says that the goal

³⁸Knezevich and Fowlkes, op. cit., p. 70.

³⁹Linn, op. cit., 1956, pp. 277-278.

⁴⁰Casey, op. cit., p. 65.

⁴¹Linn, op. cit., 1934, p. 65.

⁴²Aljian, op. cit., Sec. 18:22, 23.

⁴³Linn, op. cit., 1956, p. 255.

of standardization is to secure the maximum amount of similarity among items being purchased. Its primary aim is to increase the efficiency of ordering, delivery, storage and utilizing supplies and equipment. A second aim is to reduce the actual cost that the school incurs for the materials it purchases. In the process of standardizing materials lists and order forms, care must be taken to avoid indiscriminate lowering of quality or reduction of quantity. Nor should standardization exceed the bounds of good sense. When concerned only with weight, size, finish, composition, grade, packaging and similar considerations, a standardization program tends to avoid stifling of the staff it seeks to serve. Three traits of an effective standardization program are:

1. Provision for adding or altering standards as needs and products change.
2. Provision to make exceptions where the educational program warrants more than one kind of an item.
3. Recognition that there is a point beyond which further standardization may inhibit the total enterprise.⁴⁴

Standardization helps to eliminate the purchase of

⁴⁴Casey, op. cit., p. 56.

duplicate items at uneconomic costs and helps to eliminate those which are unnecessary or wasteful. In addition, standardization facilitates the writing of specifications by cutting down the number of articles purchased by a board.

Knezevich,⁴⁵ Linn,⁴⁶ and Clausen⁴⁷ discuss the importance of specifications to the purchasing function. Specifications should be written in clear and concise terms, should describe the characteristics of what is to be purchased and the conditions under which the purchase is to be made. Purchases and Stores indicates that specifications should be broad enough to allow for compliance and competition and should incorporate manufacturer's product descriptions or standards where possible.⁴⁸

Standard specifications obtained from government purchasing agencies, various private standards associations (such as the American Society of Mechanical Engineers) and the manufacturers' descriptive specifications lists can be

⁴⁵Knezevich and Fowlkes, op. cit., p. 66.

⁴⁶Linn, op. cit., 1956, pp. 256 ff.

⁴⁷W. H. Clausen, "Developing Vendor Specifications," Guide to More Effective Purchasing, (New York: American Management Association, Inc., 1962,) pp. 62-67.

⁴⁸Purchases and Stores, op. cit., pp. 31-32.

helpful in defining specifications on prospective purchases.

Linn, in contrast to the previously mentioned recommendation, feels that the practice of writing specifications according to brand names, while convenient, tends to limit the consideration of other brands that may be as good or even better than the brand specified.⁴⁹ Knezevich suggests that a better way to consider specifications is on the basis of performance requirements and tests.⁵⁰ Requirements should progressively, as experience accrues, become more specific so that tests of performance, whether based on external information from other users or testing agencies or from laboratory or actual on the job tests, can be evaluated in terms of specific adaptability and usefulness. Linn,⁵¹ Aljian,⁵² and Hodges⁵³ discuss testing and emphasize the desirability of securing and testing samples before goods are ordered.

In addition to the foregoing, Taylor says that specifications for requisitioned items ideally should be prepared before purchase orders are written.⁵⁴ He also

⁴⁹Linn, op. cit., 1934, pp. 72-73.

⁵⁰Knezevich and Fowlkes, op. cit., p. 66.

⁵¹Linn, loc. cit.

⁵²Aljian, op. cit., pp. 18-22, 27.

⁵³Hodges, op. cit., pp. 102-107.

⁵⁴Taylor, loc. cit.

suggests that the record of previous years' consumption should be used as a basis for determining quantity of orders as well as effecting a per pupil, per school or per teacher description of quantity to control the amount of orders and subsequent distribution.

McPherran recommends that originators of requisitions and standard orders be notified of the disposal of the form so that they may constantly be informed of the progress of the order. When an order is stopped, it is important that staff know the reasons for the actions.⁵⁵

Procedures for selecting sources of supply.

Hodges outlines the activities of the purchasing department with respect to selection of sources of supply as follows:

For locating sources he refers to trade journals and directories, industrial advertising, catalogues and salesmen.⁵⁶

The task is to select the best source of supply, i.e., the one which will supply goods at the best price and quality for the purpose intended, with adequate service and at the right time. In order to make this selection, interviewing salesmen, visiting suppliers, maintaining a file of vendors and a schedule of requirements, as well as attending conventions are all necessary

⁵⁵McPherran, loc. cit.

⁵⁶Hodges, op. cit., pp. 219-231.

and productive activities of the purchasing department.

Board policy and legal precedents (detailed above) regulate the acceptance of personal gifts and discounts. The purpose of such regulations is to protect the independent and impersonal atmosphere of procurement and prevent favoritism in placing orders.

Taylor indicates that when all other factors are equal or comparable, local suppliers should be given preference.⁵⁷ The basis of this recommendation is the economic consideration that money spent locally will circulate to the advantage of the whole community. Johns and Morphet suggest that local buying is good public relations.⁵⁸

Procedures for processing orders. From Taylor's checklist, the following generalizations are apparent.⁵⁹ Uniform requisition forms and procedures should be maintained. A definite schedule for receiving orders and requisitions from schools should be adhered to; principals should approve all orders that originate in their building and the superintendent should have authority to give final

⁵⁷Taylor, loc. cit.

⁵⁸Johns and Morphet, loc. cit.

⁵⁹Taylor, loc. cit.

approval to all orders or requisitions. Once orders and requisitions from principals have been finally approved, the purchasing agent should make out a purchase order, usually in multiple copies. Two copies should be sent to the vendor who keeps one and returns the other one, duly signed. This returned copy then becomes the contract on which execution by both parties must proceed. Casey is emphatic on this.⁶⁰

To avoid extension of agency to many employees, teachers and custodians should never be given permission to charge items against the school's account, even for small items.

Most authors, including Linn,⁶¹ DeYoung,⁶² Reeder,⁶³ and Knezevich⁶⁴ discuss competitive bidding as the basis for awarding large purchase orders. Although this is required by law in the United States, no mention of it appears in Canadian law.⁶⁵ Linn discusses split awards

⁶⁰Casey, op. cit., pp. 59-60.

⁶¹Linn, op. cit., 1934, pp. 76-81.

⁶²DeYoung, op. cit., pp. 386-395.

⁶³Reeder, op. cit., p. 321.

⁶⁴Knezevich and Fowlkes, op. cit., pp. 68-69.

⁶⁵Aljian, op. cit., Sec. 18:7, 8.

and emphasizes the necessity of securing full information with respect to quality before bids are accepted. Failure to do so combined with inexact or non-existent specifications can in his view be costly.⁶⁶

Procedures relating to receiving, inspecting, and payment. McPherran suggests that all vendor invoices received at the purchasing office should be checked against the purchase order as issued for accuracy.⁶⁷ Goods, when received, should also be checked against the order and against the specifications to ensure that quality and delivered quantity are correct.⁶⁸ Inspection for damage should be routinized and claims against the carrier or vendor initiated promptly.⁶⁹

The copy of the purchase order coupled with the vendor's invoice and with affixed affirmation of delivery provides a documented basis for payment. Cheques can then be drawn so that payment can proceed as soon as board approval is secured.

Reeder emphasizes the importance of waiting until

⁶⁶Linn, op. cit., 1956, pp. 266-268.

⁶⁷McPherran, loc. cit.

⁶⁸Reeder, op. cit., p. 332.

⁶⁹Linn, op. cit., 1956, p. 282.

after delivery and inspection before making payment as a safeguard against having to accept inferior materials.⁷⁰ DeYoung suggests that payment be made as soon as possible after delivery to take advantage of prompt-payment discounts, often from two to ten per cent of the cost of the purchase.⁷¹

Procedures relating to storing, inventorying and distributing. Reeder,⁷² Casey,⁷³ and Taylor⁷⁴ discuss storing and inventorying and reach conclusions similar to those expressed by Linn.

1. Supplies should be available when needed.
2. Older stock should be used up so that it will not deteriorate or become obsolete.
3. Stock should be arranged so that time is not wasted in searching for items wanted.
4. Stock should be arranged so that a minimum of time and effort is required for storing or distributing supplies.
5. Accurate records must be kept to show amounts of supplies received and distributed, and where distributed.
6. The stock should be protected against theft and fire.
7. There should be some definite individual responsible for releasing the stock. Individual employees should not be given freedom to help themselves as they please.

⁷⁰Reeder, loc. cit.

⁷¹DeYoung, op. cit., pp. 414-416.

⁷²Reeder, op. cit., p. 324.

⁷³Casey, op. cit., pp. 63-64.

⁷⁴Taylor, loc. cit.

8. Individual employees should not be given knowledge of the amounts of supplies in storage. Some individuals become careless and wasteful when they see a considerable stock of supplies on hand.
9. A periodic inspection of storage rooms should be made by some responsible authority.
10. A periodic inspection of supply cabinets should be made by some responsible authority.
11. Individuals should not be permitted to hoard supplies in classrooms.
12. An inventory of supplies should be taken annually.
13. A perpetual inventory should be kept of all supplies, by items.⁷⁵

Linn and others suggest that a calendar be drawn up and followed as to time and amount of each item that is delivered to schools.⁷⁶ Some flexibility to meet unexpected situations needs to be provided. To control this flexibility, some system of storeroom requisition system is suggested by Taylor.⁷⁷ Teachers may present requisitions to the principal or a designated officer in order to receive classroom supplies and principals similarly requisition the central warehouse to receive building supplies - including janitorial supplies.

⁷⁵Linn, op. cit., 1934, pp. 90, 91.

⁷⁶Ibid.

⁷⁷Taylor, loc. cit.

IV. UNIT COST ANALYSIS

Knezevich and Fowlkes contribute the following:

Cost accounting for schools endeavors to ascertain and evaluate the cost of units of service performed for or units of benefits received by the public. The extreme difficulty of objectively measuring educational services or benefits forces public school cost accounting to be confined to recording how much was spent for definable areas or programs. Where the accounting systems are well designed and carefully maintained, the determination of costs of various educational programs is no great problem. The great errors and misinterpretations are found in attempts to evaluate the significance of cost data. Cost figures can easily delude those who have but a smattering of knowledge of educational institutions and their systems of financial accounting.

The most frequently used raw per capita unit is the per pupil unit in average daily attendance. This per pupil unit is computed by adding the aggregate days of attendance of all pupils and dividing this by the number of days school was actually in session. The number of pupils in average daily attendance is divided into the total educational costs (or other unit cost such as the instructional supply cost) to obtain the cost per pupil in average daily attendance.⁷⁸

There are a number of limitations affecting the significance of unit cost figures. Definition of what constitutes daily attendance varies from area to area. Allowance for part-time pupils is rarely included in the computation of unit costs. Educational costs vary markedly between the elementary and secondary schools.

⁷⁸Knezevich and Fowlkes, op. cit., pp. 152-158.

But for all its limitations, according to Knezevich and Fowlkes, the per pupil cost in average daily attendance is probably best adapted to measure unit costs of specific services.⁷⁹

V. ALLIED CONSIDERATIONS

McPherran describes an agency that has been established by the California State Board of Education whose purpose is to establish a standard price list with suggested sources of supply and detailed specifications against which boards may compare the costs of articles they purchase.⁸⁰ Rhodes feels that a similar function should be performed by the Michigan State Department of Public Instruction.⁸¹ Perhaps this is a widespread need.

Cooperative purchasing is discussed by Aljian,⁸² Linn⁸³ and others and is the especial concern of Truax. Truax found that school officials in San Diego County,

⁷⁹Ibid.

⁸⁰McPherran, loc. cit.

⁸¹Charles W. Rhodes, "Practices and Trends in Purchasing Instructional Supplies by Michigan Public School Districts." (unpublished Master's thesis, Michigan State University, Lansing, Mich., 1964.)

⁸²Aljian, op. cit., Sec. 18:10-18.

⁸³Linn, op. cit., 1934, pp. 60 ff.

California, express a need for more widespread practice of cooperative purchasing. Vendors contacted by Truax agreed that such plans are advantageous to all concerned. Some considerations on which cooperative purchasing plans were seen as being contingent include extra costs of administration, storage, and distribution. In general, when the area to be served is compact, quantity discounts rapidly overshadow these extra costs.⁸⁴ Truax found that many districts which currently operate cooperative purchasing plans express interest in assisting other areas in implementing similar programs.⁸⁵

VI. SUMMARY

The review of literature has shown that there is a legal basis with which purchasing personnel should be familiar. Principles of good purchasing practices are agreed upon by many authorities and have been validated through use in many systems. On the basis of these principles, evaluation of the procurement function is feasible. This information, combined with appropriate cost analysis procedures and statistics from individual districts will allow accurate description of units chosen for study.

⁸⁴James N. Truax, "Implications for Cooperative Purchasing by Northern San Diego County School Districts," (unpublished Master's thesis, San Diego State College, San Diego, California, 1962.)

⁸⁵Ibid.

CHAPTER III

RESEARCH PROCEDURES

I. THE SAMPLE

Two major trading areas in the Province of Alberta were selected as the sample. The cities of Edmonton and Lethbridge and the school systems in their immediate vicinities were thought to be representative of similar trading and service areas throughout the province. The Calgary area forms a unit roughly similar to that of the Edmonton area. The cities of Medicine Hat, Red Deer, and Grande Prairie with their surrounding areas have similarities to the Lethbridge area. It was assumed, therefore, that conditions found in the Edmonton and Lethbridge areas would be representative of conditions existing generally throughout the province.

In particular, one area studied included most of the school systems in the city of Lethbridge, and divisions, counties and independent districts that operate high schools in the western part of zone six.¹ The eastern part of the zone was not included for the reason that it seems to belong in the trading area of Medicine Hat. The

¹The province has been arbitrarily divided into six zones by the Department of Education.

other area studied included most of the school systems in the city of Edmonton, and divisions, counties and independent districts that operate high schools in zones two and three. The zone structure was used in describing the areas to be studied for the reason that there is interaction of school officials within zones at the present time. Regional meetings of trustees, teachers and superintendents are frequently held on a zone basis so there would be no difficulty in considering cooperative purchasing in the areas specified.

The sample was originally comprised of fifty-six districts. Of these, forty-seven (eighty-four per cent) responded to the questionnaire. Two returned blank instruments. The respondent in each case felt that the district in which he worked was too small to apply the criteria used to assess the purchasing function. One reply was received after the others had been processed. Four city districts, twenty-three divisions and counties, and seventeen independent districts made up a usable sample of forty-four, or seventy-nine per cent of the districts chosen for study. (See Appendix A.)

II. INSTRUMENTATION AND DATA COLLECTION

With the approval of the Department of Education and the support of the Alberta School Trustees' Associ-

ation, the superintendents of the divisions and counties and the senior purchasing officials in the other districts were asked to supply the needed information. The Trustees' Association mailed a letter to the fifty-six districts on April 14, 1966. (See Appendix B.) On April 16, 1966, the questionnaires with a letter of explanation followed. (See Appendix C.) A fifty-three per cent return was experienced by May 3, 1966, when a follow-up letter was sent to those districts that had not yet responded. (See Appendix D.) After contacting several districts for the third time, by telephone, eighty-two per cent of the districts had responded by June 1, 1966.

The questionnaire was an adaptation, with considerable modification to fit the Alberta scene, of numerous checklists, outlines and recommendations found in the literature. Each question described a condition that characterizes efficient purchasing practice and was applicable to all systems studied. The instrument was examined by Robert E. Sackley, purchasing official of the Cardston School Division and R. L. Rankin, buyer for the University of Alberta. To further establish validity, a panel of administrators, including W. J. Bullock of the Edmonton Public School Board # 7; H. Kolesar, formerly Inspector of High Schools in Alberta; V. McNamara, Superintendent, Primary Division, Department of Education, New

Guinea; W. Hamilton, Regional Director of Education, Queensland, Australia; and P. J. Atherton, graduate student in Educational Administration, University of Alberta, examined the instrument. Clarity of meaning was achieved through careful re-phrasing of obscure sections. On the basis of these activities, face validity was claimed for the instrument.

The reliability of the instrument was assumed initially. After administration, a reliability coefficient of .85 was calculated using the Kuder-Richardson formula 20. This was sufficiently high to generalize that the test had internal consistency and was homogeneous.²

All other data required in the study were obtained from Department of Education records, which were assumed to be both valid and reliable sources of information. The total costs of instructional supplies were found in the 1964 Annual Reports of the districts studied.³ Aggregate days attendance was found in a Department of Education compilation of 1964-65 year-end attendance

²George A. Ferguson, Statistical Analysis in Psychology and Education, (New York: McGraw-Hill Book Co., Inc., 1959.)

³Department of Education Form EG-23-1700 for districts and divisions studied, and Form 402-94, Department of Municipal Affairs for counties.

reports.⁴ The number of legal teaching days in 1964-65 was 199 with two days off for conventions, and one extra day for Farmer's Day in rural districts.⁵ Enrollment figures were found in the 1965 Annual Report of the Department of Education.⁶ The average numbers of credits taught were calculated from information regarding each school reported to the Department of Education on Form A cards.⁷ The percentage of costs of delivering items to districts was reported in the questionnaire and was used to adjust the per pupil cost obtained by subtracting a per cent of that cost equal to the per cent reported. These extra costs for transportation of items ranged from nothing to five per cent.

All data used in the study were assumed to represent interval scale measurement. The questionnaire scores were simple totals representing the number of approved

⁴Taken from a compilation of year-end reports, form 1302-320, Pupil Attendance and Student Enrollment, June, 1965, for each school district reporting.

⁵Sixtieth Annual Report of the Department of Education of the Province of Alberta, 1965, Edmonton: Queen's Printer, 1966. p. 212.

⁶Ibid., pp. 194-195.

⁷Form A, School Registration Form and General Information, Department of Education, Edmonton, for each school offering instruction in the districts studied.

purchasing practices that were reported as existing. Enrollment figures and credit loads were taken to represent measurement on an interval scale. The same was true of the cost figures.

CHAPTER IV

ANALYSIS OF DATA

I. ITEM ANALYSIS OF QUESTIONNAIRE

The questionnaire was scored by counting the number of "Yes" responses to items and presenting these as seven subscores and an overall total. The subscores indicated responses to groups of items that were thought by the researcher and corroborated by the literature, to be concerned with the various phases of the overall purchasing program.

Since the reliability coefficient for the instrument of .85 signified that eighty-five per cent of the variation in measurements reflected in the item scores was attributable to variation in true scores, it was deemed valid to report the percentage of "Yes" responses to each item. Further support for using percentage was that all districts would report a one hundred per cent "Yes" response when the purchasing function in that district was being conducted according to recommendations found in the literature.

The forty-four districts that responded initially were grouped and regrouped until six groups were defined for purposes of analysis. The fourteen districts in the

Lethbridge area, because of their proximity, could conceivably form a large purchasing pool if they chose to do so. They therefore were considered together. Consideration of the thirty districts in zones two and three as a unit was attempted because of their proximity to Edmonton and the possibility that they could also form a purchasing pool. The four city districts in Edmonton and Lethbridge were grouped together because of similarities that city districts shared. They had minimal within-district transportation costs. They generally offered expanded programs in comparison with those offered in rural areas. It was also felt that divisions and counties had significant similarities that would be different from those experienced in independent districts, where for the most part, there was not a superintendent to coordinate the supply function. Consideration of the total sample of forty-four districts as a single unit of analysis then completed the groupings that were made.

Reported in Table I through VII are the percentage of "Yes" responses to each item in the questionnaire.

School Board Policy

Presented in Table I are the percentage of "Yes" responses for Section I of the instrument. Seventy-five

TABLE I

PERCENTAGE OF "YES" RESPONSES TO ITEMS ON
QUESTIONNAIRE I SCHOOL BOARD POLICY -
ORGANIZATION AND PERSONNEL

Area	% "Yes" Responses by Item ^a												
	1	2	3							4	5	6	7
			a	b	c	d	e	f					
Lethbridge area N=14	43	86	50	21	29	29	29	71	0	93	71	14	
Edmonton area N=30	43	60	20	10	13	20	7	20	17	90	70	17	
City districts N= 4	75	75	50	50	50	75	75	75	25	100	75	25	
Divisions and Counties N=23	48	52	30	13	17	13	9	35	9	86	66	13	
Town and Rural Districts N=17	29	88	24	6	12	24	12	29	12	94	76	18	
Total N=44	43	68	30	14	18	23	14	36	11	91	71	16	

^aDescription of items:

1. Written policies regarding purchasing exist.
2. Purchasing is directed by one individual.
3. Board minutes or a policy handbook contain:
 - a) name(s) of purchasing personnel.
 - b) formal title(s) (e.g. purchasing agent)
 - c) effective date of appointment.
 - d) limits under which they operate.
 - e) list of duties.
 - f) specific grant of power to act for the board.
4. Purchasing personnel are responsible to the Supt.
5. Board members do not make purchases for the board.
6. Bills incurred by non-purchasing personnel remain unpaid.
7. Purchasing forms and procedures have been approved by legal counsel.

per cent of city districts, twenty-nine per cent of town and rural districts, and forty-three per cent of all boards that reported had developed written policies regarding the purchasing function. Sixty-eight per cent of all districts reported centralization of purchasing under one individual. Most boards did not record the names of purchasing personnel in the minutes or in a handbook. It was rare for boards to record formal titles of purchasing personnel, effective dates of appointment, limits of their authority, list of duties or specific grant of power under which purchasing officials operated. It was in the cities and in districts surrounding Lethbridge where information regarding titles, dates of appointments, limits of authority, duties and specific power was most frequently recorded.

In only a few (eleven per cent) of the areas studied were purchasing personnel directly responsible to the superintendent. In seventy per cent of the districts studied, purchasing personnel were responsible to the board as a whole. In the remaining nineteen per cent, purchasing agents were responsible to Secretary/Treasurers, individual board members, principals, or department heads.

The great majority of districts disapproved of individual board members purchasing for the board. Where this was done, it was only after specific authority had

been given for a particular purpose.

While boards generally did not approve of employees other than purchasing officials making purchases, in unusual circumstances twenty-nine per cent of the districts studied did make payments for purchases made by non-purchasing personnel.

When a board ratifies agreements to purchase made by individual board members or other non-purchasing personnel as reported in the previous two paragraphs, agency by ratification, subject to the abuses discussed in Chapter II is created.¹

In only a few districts have purchase order forms and procedures been examined by legal counsel.

Determining Requirements and Establishing Standards

Reported in Table II are the percentage of "Yes" responses to items associated with determining requirements and establishing standards. Virtually all districts consulted professional educators when selecting instructional supplies. Previous years' needs were generally used for determining quantity. Three-fourths of the districts studied used per pupil, per school, or per teacher units in establishing quantity of orders.

¹supra. p. 14.

TABLE II

PERCENTAGE OF "YES" RESPONSES TO ITEMS ON QUESTIONNAIRE
II PROCEDURES FOR DETERMINING REQUIREMENTS AND
ESTABLISHING STANDARDS

Area	% "Yes" Responses by Item ^a										
	1	2	3	4	5	6	7	8	9	10	11
Lethbridge area N=14	100	93	86	36	100	43	71	86	79	64	79
Edmonton area N=30	93	93	70	40	97	70	70	60	70	77	83
City districts N=4	100	100	100	100	100	100	100	100	100	100	100
Divisions and Counties N=23	96	96	78	39	96	87	83	52	78	65	83
Town and Rural districts N=17	94	88	65	24	100	18	47	82	59	76	76
Total N=44	96	93	75	39	98	61	71	68	73	73	82

^aDescription of items:

1. Educators assist in the selection of supplies.
2. Use rate is one basis of determining quantity ordered.
3. A per pupil, per school, or per teacher unit is used as one basis for determining quantity of current orders.
4. Recurring needs are ordered on schedule.
5. Cheaper rates are secured through bulk purchasing.
6. A standardized supply list is maintained.
7. A standardized order form is maintained and used.
8. Specifications are maintained.
9. Samples of goods are obtained.
10. Requisition forms are used to initiate purchase of items that have not been supplied previously.
11. Specifications for requisitioned items are prepared before orders are placed.

Only thirty-nine per cent of all districts studied ordered recurring needs according to a calendar. All but one of the districts experienced savings through purchasing in bulk. Standardized supply lists were maintained in only sixty-one per cent of the districts, while seventy-one per cent of them all used standardized order forms. Specifications were maintained in sixty-eight per cent of the districts studied; samples were used in seventy-three per cent of them, and requisition forms were used to initiate purchase of items that were not listed on standardized forms in seventy-three per cent of the districts studied. When needed, eighty-two per cent of districts studied prepared specifications before orders were placed for items that were being ordered for the first time.

All of the city districts studied followed all of the recommendations associated with Section II of the instrument.

Selecting Sources of Supply

Presented in Table III is a summary of responses regarding procedures for selecting sources of supply. Every district studied reported that they attempt to place business with suppliers who have goods of adequate quality for the purpose needed at the cheapest price and who give the service required. Ninety-six per cent of the

TABLE III

PERCENTAGE OF "YES" RESPONSES TO ITEMS ON
QUESTIONNAIRE III PROCEDURES FOR
SELECTING SOURCES OF SUPPLY

Area	% "Yes" Responses by Item ^a									
	1	2	3	4	5	6	7	8	9	10
Lethbridge area N=14	86	93	100	15	79	93	86	100	79	79
Edmonton area N=30	70	83	93	13	63	97	83	100	70	47
City districts N= 4	100	100	100	50	75	75	100	100	100	75
Divisions and Counties N=23	70	91	100	9	65	96	78	100	74	57
Town and Rural districts N=17	76	76	88	12	71	100	88	100	65	53
Total N=44	75	86	96	14	68	96	84	100	73	57

^aDescription of items:

1. A file of vendors is maintained.
2. Favoritism of brands, firms, and salesmen is avoided.
3. Interviews are afforded to salesmen.
4. Visits are made to suppliers' premises.
5. Purchasing agents have access to trade journals.
6. Local firms are favored when price, quality and service are competitive.
7. The board disapproves of employees accepting gifts or receiving discounts on goods bought from suppliers for personal use.
8. Business is placed with suppliers who have goods of adequate quality for the purpose needed at the cheapest price and who give the service required.
9. Competitive bidding is used.
10. Quotations are secured before orders are placed.

districts afforded interviews to salesmen and favored local firms when price, quality, and service were competitive or equal. Eighty-six per cent reported avoiding favoritism of brands, firms and salesmen. Eighty-four per cent of all districts reporting did not approve of employees accepting gifts or receiving discounts on personal goods bought from suppliers.

Seventy-five per cent maintained a file of vendors. Seventy-three per cent made use of bidding competitively as a means of selecting sources of supply. Sixty-eight per cent of them all had access to trade journals. Fifty-seven per cent secured quotations on items before orders were placed and fourteen per cent regularly visited suppliers' premises.

Reported in Table III is information which shows that a greater percentage of city districts followed more of the recommendations for effective selection of sources of supply than did other groups of districts studied.

Processing Orders

Presented in Table IV is a summary of responses to items regarding procedures for processing orders. Again, city districts followed more of the suggested procedures than did other groups studied. Eighty-four per cent of all districts studied had purchase orders prepared under

TABLE IV
PERCENTAGE OF "YES" RESPONSES TO ITEMS ON
QUESTIONNAIRE IV PROCEDURES FOR
PROCESSING ORDERS

Area	% "Yes" Responses by Item ^a					
	1	2	3	4	5	6
Lethbridge area N=14	64	71	100	50	86	86
Edmonton area N=30	47	80	77	37	77	80
City districts N= 4	100	100	100	100	75	100
Divisions and Counties N=23	57	74	74	44	83	96
Town and Rural districts N=17	36	76	94	24	76	59
Total N=44	52	77	84	41	79	82

^aDescription of items:

1. Orders from schools are received on schedule.
2. Educators approve all orders for instructional supplies.
3. One person directs the preparation of purchase orders.
4. A planned system for supplying rush, emergency and experimental supplies to the schools is in operation.
5. Originators of purchase orders are notified of the disposition of all orders submitted.
6. Materials are ordinarily delivered F.O.B. destination.

the direction of one person. Eighty-two per cent of all districts studied had materials delivered F.O.B. destination. Seventy-nine per cent notified originators of orders of the disposition of each submitted order and requisition. Seventy-seven per cent required the approval of a professional educator for all orders from schools and forty-one per cent maintained a planned system for supplying rush, emergency and experimental supplies to schools.

Receiving, Inspecting, Testing, and Payment

Presented in Table V is a summary of responses relating to receiving, inspecting, testing and payment. Item one showed that sixty-six per cent of all districts received and checked supplies at a centralized distribution point. It should be noted that none of the city districts did this. The respondent from one city system suggested that the expense of operating a warehouse large enough to handle all supplies would be unjustified when short local deliveries to schools could be made immediately after delivery and inspection in commercial freight sheds. Virtually all districts checked supplies for quantity and damage, used vouchers to authorize payment, paid promptly but after delivery, and received discounts when available for prompt payment. However, only few districts reported

TABLE V

PERCENTAGE OF "YES" RESPONSES TO ITEMS ON
QUESTIONNAIRE V PROCEDURES RELATING TO
RECEIVING, INSPECTING, TESTING, AND
PAYMENT

Area	% "Yes" Responses by Item ^a								
	1	2	3	4	5	6	7	8	9
Lethbridge area N=14	64	100	100	100	29	21	93	100	100
Edmonton area N=30	67	97	97	90	43	37	97	87	97
City districts N= 4	0	100	100	100	75	50	100	50	100
Divisions and Counties N=23	74	96	96	96	39	30	96	100	96
Town and Rural districts N=17	71	100	100	88	29	29	94	88	100
Total N=44	66	98	98	93	39	32	96	91	98

^aDescription of items:

1. Supplies are received and checked at central locations.
2. Quantity is checked against the order and invoice.
3. Supplies are checked for damage when received.
4. Quality is checked against specifications.
5. Suitability and performance tests are conducted.
6. Results of tests and evaluations made elsewhere are considered regularly.
7. Discounts for prompt payment are obtained.
8. Vouchers are approved by the board or finance committee before payment is made.
9. Payment is always made after delivery.

conducting tests of suitability and performance or using the results of tests and evaluations made elsewhere as part of their supply program. This may account for the widespread interest reported (eighty-nine per cent) in establishing an agency in Alberta to conduct evaluations of supplies.

Storage, Inventory, and Distribution

Presented in Table VI is a summary of responses to items that dealt with storage, inventory, and distribution. Over eighty per cent of the districts studied carried fire and damage insurance on stocks of supplies and systematically controlled inventory volume. Between sixty per cent and eighty per cent felt that storage facilities in schools and warehouses were adequate, kept records of supplies distributed, regulated inventory volume by use rate, and rotated stock. Fifty per cent or less maintained perpetual inventory records in schools and warehouses, controlled "hoarding" of supplies, and authorized only one person to release stock from school storerooms and warehouses.

Legal Requirements

Presented in Table VII are responses relating to legal requirements in purchasing. All districts reported that regular use is made of the school's right to purchase

TABLE VI

PERCENTAGE OF "YES" RESPONSES TO ITEMS ON
QUESTIONNAIRE VI PROCEDURES RELATING
TO STORAGE, INVENTORY, AND
DISTRIBUTION

Area	% "Yes" Responses by Item ^a													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Lethbridge area N=14	86	57	86	50	29	21	64	86	86	86	71	43	36	29
Edmonton area N=30	73	70	90	77	30	20	70	80	83	83	60	53	50	50
City districts N= 4	100	50	100	75	75	0	100	100	100	100	100	100	25	50
Divisions and Counties N=23	83	91	96	78	22	22	78	91	96	87	65	48	44	39
Town and Rural districts N=17	65	36	76	53	29	24	47	65	65	76	53	41	53	47
Total N=44	77	66	89	68	30	21	68	82	84	84	64	50	48	43

^aDescription of items:

1. Storage facilities are adequate.
2. Warehouse space is adequate.
3. Stock is insured.
4. Distribution records are maintained.
5. Perpetual inventory records are kept at warehouses.
6. Perpetual inventory records are kept in schools.
7. Inventory volume is regulated by use rate.
8. Inventory is low enough to prevent deterioration.
9. Inventory is low enough to prevent obsolescence.
10. Inventory is high enough to avoid total consumption.
11. Stock rotation is practiced.
12. Inventory controls eliminate hoarding and pilferage.
13. One person only releases stock from school storerooms.
14. One person only releases stock from warehouses.

sales-tax free. Two districts reported that they did not scrupulously follow provisions of Section 89, The Alberta School Act, "Prohibited Transaction."²

Opinionnaire

Reported in Table VIII are certain opinions that respondents to the questionnaire had regarding determining requirements and establishing standards. Eighty-nine per cent of the respondents felt that an agency to test supplies, prepare standard specifications and recommend sources of supply would be of assistance. One superintendent felt that if such a bureau were kept on a basis similar to that of "Good Housekeeping Institute" it might have value, but if it were subjected to pressures, it would inevitably lead to "dictatorship".

Cooperative purchasing had been investigated by twenty-seven per cent of the districts studied. Paper supplies and audio-visual aides were the most frequently mentioned items that had been purchased cooperatively. Of the districts reporting, no area had cooperatively purchased with more than two other districts and in the majority of cases, only two districts had ever purchased together. However, eighty-nine per cent of the respondents

²The Alberta School Act, (Chpt. 95, R.S.A., 1955.)

TABLE VII
PERCENTAGE OF "YES" RESPONSES TO ITEMS ON
QUESTIONNAIRE VII LEGAL REQUIREMENTS

Area	% "Yes" Responses by Item ^a	
	1	2
Lethbridge Area N=14	100	100
Edmonton Area N=30	93	100
City districts N= 4	100	100
Divisions and Counties N=23	100	100
Town and Rural districts N=17	88	100
Total N=44	96	100

^aDescription of items:

1. Provisions of Section 89, The Alberta School Act, Prohibited Transactions, are scrupulously followed.
2. Regular use is made of the school district's right to purchase sales-tax free.

TABLE VIII
PERCENTAGE OF "YES" RESPONSES TO ITEMS
ON OPINIONNAIRE

Area	% "Yes" Responses by Item ^a			
	1	2	3	4
Lethbridge area N=14	86	36	86	64
Edmonton area N=30	90	23	90	80
City districts N= 4	100	25	100	50
Divisions and Counties N=23	83	22	87	87
Town and Rural districts N=17	94	23	88	77
Total N=44	89	27	89	75

^aDescription of items:

1. Would an Alberta agency to test supplies, prepare standard specifications and recommend sources of supply be of assistance?
2. Has your board investigated cooperative purchasing of supplies with neighboring districts?
3. Do you believe your board would agree to purchase cooperatively with neighboring districts if savings could be effected thereby?
4. Do you feel that changes could be made that would make your purchasing operation more economical without jeopardizing the educational program in your district?

felt that their boards were interested in purchasing cooperatively. One respondent from a large city district suggested that the district now receives substantial discounts through purchasing in bulk. He expressed doubt that cooperative purchasing, even on a provincial scale, would result in greater savings to the district than it now experiences. This opinion seemed to be based on the assumption that additional administrative cost would be involved.

Item four on the opinionnaire, which dealt with the need to evaluate the purchasing function, was answered in the affirmative by seventy-five per cent of the districts studied. Although mean scores on the instrument were below that which would be expected if the purchasing function were operated in accordance with recommendations found in the literature, most respondents were satisfied with their present procedures.

II. ANALYSIS OF SUBSCORES BY GROUPS OF DISTRICTS

In order to determine the sensitivity of the instrument to varying conditions within the six groupings of districts that interested the researcher, eight tests for significance of differences in means of subscores for each of the six groupings were computed. The subscores

for Section I of the questionnaire, school board policy, were considered variable I; subscores for Section II, determining requirements and establishing standards, were considered variable II and so forth to subsection VII, legal requirements as variable VII and the total score on the instrument as variable VIII.

As mentioned above, each score was assumed to be on an interval scale.

Chi-square Goodness of Fit tests on variables I through VI and VIII showed that scores were normally distributed for these variables throughout the sample. However, variable VII, legal requirements, departed from normality.

The Hartley test on variables I through VIII illustrated homogeneity of variance in all but variable I, school board policy, and variable VI, procedures relating to storage, inventory and distribution. The departures from homogeneity, however, were not gross when the determination of variance for the atypical four city districts was ignored.

It was conjectured that the results of analysis of variance procedures (the method used to test significant differences in means of subscores) would be valid at the .05 level of significance despite the departures from normality and homogeneity of variance noted above.

Ferguson states:

One advantage of the analysis of variance is that reasonable departures from the assumptions of normality and homogeneity may occur without seriously affecting the validity of the inferences drawn from the data.³

The means, standard deviations and range for the six groupings showing significant differences in means as determined by the Newman-Keuls method were presented in Tables IX to XVI.

It is reported in Table IX that there was no statistical difference between mean scores on Section I of the instrument, school board policy, in the Lethbridge and Edmonton areas. There were, however, significant differences between the mean for city districts and (a) the divisions and counties, (b) the town and rural districts, and (c) the total sample. City districts appeared to follow more of the recommendations regarding school board policy-organization and personnel than did other districts studied.

³George A. Ferguson, Statistical Analysis in Psychology and Education, (New York: McGraw-Hill Book Co., Inc., 1959,) p. 240.

TABLE IX

MEANS, STANDARD DEVIATIONS, AND RANGE OF SIX
GROUPINGS OF DISTRICTS ON VARIABLE I:
SCHOOL BOARD POLICY, ORGANIZATION
AND PERSONNEL

Area	Mean	St. Dev.	Range	
			High	Low
Lethbridge area N=14	5.36	2.27	10	3
Edmonton area N=30	3.87	2.50	11	0
City districts N= 4	7.25 ^a	3.20	10	4
Divisions and Counties N=23	3.91	2.68	11	0
Town and Rural districts N=17	4.24	16.4	7	2
Total N=44	4.34	2.51	11	0

^aSignificantly different from the total at
.05 level.
Bracketed means are significantly different
from each other.

Summarized in Table X are mean scores of Section II of the questionnaire, procedures for determining requirements and establishing standards. Again there was no significant difference between mean scores in this division of the purchasing function in the Lethbridge

TABLE X

MEANS, STANDARD DEVIATIONS, AND RANGE OF SIX
GROUPINGS OF DISTRICTS ON VARIABLE II:
PROCEDURES FOR DETERMINING REQUIREMENTS
AND ESTABLISHING STANDARDS

Area	Mean	St. Dev.	Range	
			High	Low
Lethbridge area N=14	8.36	2.13	11	5
Edmonton area N=30	8.23	2.03	11	4
City districts N= 4	11.00 ^a	0.00	11	11
Divisions and Counties N=23	8.52	1.86	11	4
Town and Rural districts N=17	7.29	1.86	10	4
Total N=44	8.27	2.04	11	4

^aSignificantly different from the total at
.05 level.

Bracketed means are significantly different
from each other.

and Edmonton areas. But significant differences between
the mean for city districts and (a) divisions and counties,
(b) town and rural districts, and (c) the total sample
again appeared.

Summarized in Table XI are mean scores on Section III

TABLE XI

MEANS, STANDARD DEVIATIONS, AND RANGE OF SIX
GROUPINGS OF DISTRICTS ON VARIABLE III:
PROCEDURES FOR SELECTING SOURCES
OF SUPPLY

Area	Mean	St. Dev.	Range	
			High	Low
Lethbridge area N=14	8.07	1.14	9	5
Edmonton area N=30	7.20	1.58	10	4
City districts N= 4	8.75	.96	10	8
Divisions and Counties N=23	7.39	1.53	10	4
Town and Rural districts N=17	7.29	1.49	9	5
Total N=44	7.48	1.50	10	4

There is no significant difference in means.

of the questionnaire, here being referred to as variable III. Since no significant difference in means was found, it appeared that there was no essential difference in procedures being used to select supplies when compared with the recommendations in the literature. Each district employed a similar number of the suggested procedures. What differences there were would be in the particular

TABLE XII

MEANS, STANDARD DEVIATIONS, AND RANGE OF SIX
GROUPINGS OF DISTRICTS ON VARIABLE IV:
PROCEDURES FOR PROCESSING ORDERS

Area	Mean	St. Dev.	Range	
			High	Low
Lethbridge area N=14	4.57	1.28	6	2
Edmonton area N=30	3.97	1.54	6	1
City districts N= 4	5.75 ^a	.50	6	5
Divisions and Counties N=23	4.26	1.51	6	1
Town and Rural districts N=17	3.65	1.32	6	1
Total N=44	4.16	1.48	6	1

^aSignificantly different from the total at
.05 level.

Bracketed means are significantly different
from each other.

suggestions followed in each district.

Summarized in Table XII are mean scores on Section IV of the questionnaire, procedures for processing orders. There was no significant difference in means on variable IV in the Lethbridge and Edmonton areas. Again, city districts differed significantly in mean score from

TABLE XIII

MEANS, STANDARD DEVIATIONS, AND RANGE OF SIX
GROUPINGS OF DISTRICTS ON VARIABLE V:
PROCEDURES RELATING TO RECEIVING,
INSPECTING, TESTING AND PAYMENT

Area	Mean	St. Dev.	Range	
			High	Low
Lethbridge area N=14	7.07	.92	9	6
Edmonton area N=30	7.10	1.18	9	4
City districts N= 4	6.75	.96	8	6
Divisions and Counties N=23	7.22	1.28	9	4
Town and Rural districts N=17	7.00	.87	9	6
Total N=44	7.09	1.10	9	4

There is no significant difference in means.

(a) divisions and counties, (b) town and rural districts, and (c) the total sample.

Presented in Table XIII are the means of variable V, procedures relating to receiving, inspecting, testing and payment. There was no significant difference in means for this section of the questionnaire.

Presented in Table XIV are the means scored by the

TABLE XIV

MEANS, STANDARD DEVIATIONS, AND RANGE OF SIX
GROUPINGS OF DISTRICTS ON VARIABLE VI:
PROCEDURES RELATING TO STORAGE,
INVENTORY, AND DISTRIBUTION

Area	Mean	St. Dev.	Range	
			High	Low
Lethbridge area N=14	8.29	2.99	12	1
Edmonton area N=30	8.90	3.12	14	1
City districts N= 4	10.75	1.89	12	8
Divisions and Counties N=23	9.39	1.90	12	6
Town and Rural districts N=17	7.29	3.96	14	1
Total N=44	8.71	3.06	14	1

There is no significant difference in means.

groupings of districts studied on Section VI of the questionnaire, procedures relating to storage, inventory, and distribution. Again there was no significant difference in means indicating that each area employed roughly the same number of suggested practices that experts feel to be essential to economical purchasing.

Presented in Table XV is a summary of scores on

Table 1

Summary of the results of the analysis of variance for the effect of the treatment on the response variable. The results are presented in the following table.

Source of Variation				
Treatment	df	SS	MS	F
Control	1	10.0	10.0	1.0
Treatment 1	1	20.0	20.0	2.0
Treatment 2	1	30.0	30.0	3.0
Treatment 3	1	40.0	40.0	4.0
Treatment 4	1	50.0	50.0	5.0
Treatment 5	1	60.0	60.0	6.0
Treatment 6	1	70.0	70.0	7.0
Treatment 7	1	80.0	80.0	8.0
Treatment 8	1	90.0	90.0	9.0
Treatment 9	1	100.0	100.0	10.0
Treatment 10	1	110.0	110.0	11.0
Treatment 11	1	120.0	120.0	12.0
Treatment 12	1	130.0	130.0	13.0
Treatment 13	1	140.0	140.0	14.0
Treatment 14	1	150.0	150.0	15.0
Treatment 15	1	160.0	160.0	16.0
Treatment 16	1	170.0	170.0	17.0
Treatment 17	1	180.0	180.0	18.0
Treatment 18	1	190.0	190.0	19.0
Treatment 19	1	200.0	200.0	20.0
Treatment 20	1	210.0	210.0	21.0
Treatment 21	1	220.0	220.0	22.0
Treatment 22	1	230.0	230.0	23.0
Treatment 23	1	240.0	240.0	24.0
Treatment 24	1	250.0	250.0	25.0
Treatment 25	1	260.0	260.0	26.0
Treatment 26	1	270.0	270.0	27.0
Treatment 27	1	280.0	280.0	28.0
Treatment 28	1	290.0	290.0	29.0
Treatment 29	1	300.0	300.0	30.0
Treatment 30	1	310.0	310.0	31.0
Treatment 31	1	320.0	320.0	32.0
Treatment 32	1	330.0	330.0	33.0
Treatment 33	1	340.0	340.0	34.0
Treatment 34	1	350.0	350.0	35.0
Treatment 35	1	360.0	360.0	36.0
Treatment 36	1	370.0	370.0	37.0
Treatment 37	1	380.0	380.0	38.0
Treatment 38	1	390.0	390.0	39.0
Treatment 39	1	400.0	400.0	40.0
Treatment 40	1	410.0	410.0	41.0
Treatment 41	1	420.0	420.0	42.0
Treatment 42	1	430.0	430.0	43.0
Treatment 43	1	440.0	440.0	44.0
Treatment 44	1	450.0	450.0	45.0
Treatment 45	1	460.0	460.0	46.0
Treatment 46	1	470.0	470.0	47.0
Treatment 47	1	480.0	480.0	48.0
Treatment 48	1	490.0	490.0	49.0
Treatment 49	1	500.0	500.0	50.0
Treatment 50	1	510.0	510.0	51.0
Treatment 51	1	520.0	520.0	52.0
Treatment 52	1	530.0	530.0	53.0
Treatment 53	1	540.0	540.0	54.0
Treatment 54	1	550.0	550.0	55.0
Treatment 55	1	560.0	560.0	56.0
Treatment 56	1	570.0	570.0	57.0
Treatment 57	1	580.0	580.0	58.0
Treatment 58	1	590.0	590.0	59.0
Treatment 59	1	600.0	600.0	60.0
Treatment 60	1	610.0	610.0	61.0
Treatment 61	1	620.0	620.0	62.0
Treatment 62	1	630.0	630.0	63.0
Treatment 63	1	640.0	640.0	64.0
Treatment 64	1	650.0	650.0	65.0
Treatment 65	1	660.0	660.0	66.0
Treatment 66	1	670.0	670.0	67.0
Treatment 67	1	680.0	680.0	68.0
Treatment 68	1	690.0	690.0	69.0
Treatment 69	1	700.0	700.0	70.0
Treatment 70	1	710.0	710.0	71.0
Treatment 71	1	720.0	720.0	72.0
Treatment 72	1	730.0	730.0	73.0
Treatment 73	1	740.0	740.0	74.0
Treatment 74	1	750.0	750.0	75.0
Treatment 75	1	760.0	760.0	76.0
Treatment 76	1	770.0	770.0	77.0
Treatment 77	1	780.0	780.0	78.0
Treatment 78	1	790.0	790.0	79.0
Treatment 79	1	800.0	800.0	80.0
Treatment 80	1	810.0	810.0	81.0
Treatment 81	1	820.0	820.0	82.0
Treatment 82	1	830.0	830.0	83.0
Treatment 83	1	840.0	840.0	84.0
Treatment 84	1	850.0	850.0	85.0
Treatment 85	1	860.0	860.0	86.0
Treatment 86	1	870.0	870.0	87.0
Treatment 87	1	880.0	880.0	88.0
Treatment 88	1	890.0	890.0	89.0
Treatment 89	1	900.0	900.0	90.0
Treatment 90	1	910.0	910.0	91.0
Treatment 91	1	920.0	920.0	92.0
Treatment 92	1	930.0	930.0	93.0
Treatment 93	1	940.0	940.0	94.0
Treatment 94	1	950.0	950.0	95.0
Treatment 95	1	960.0	960.0	96.0
Treatment 96	1	970.0	970.0	97.0
Treatment 97	1	980.0	980.0	98.0
Treatment 98	1	990.0	990.0	99.0
Treatment 99	1	1000.0	1000.0	100.0
Treatment 100	1	1010.0	1010.0	101.0
Treatment 101	1	1020.0	1020.0	102.0
Treatment 102	1	1030.0	1030.0	103.0
Treatment 103	1	1040.0	1040.0	104.0
Treatment 104	1	1050.0	1050.0	105.0
Treatment 105	1	1060.0	1060.0	106.0
Treatment 106	1	1070.0	1070.0	107.0
Treatment 107	1	1080.0	1080.0	108.0
Treatment 108	1	1090.0	1090.0	109.0
Treatment 109	1	1100.0	1100.0	110.0
Treatment 110	1	1110.0	1110.0	111.0
Treatment 111	1	1120.0	1120.0	112.0
Treatment 112	1	1130.0	1130.0	113.0
Treatment 113	1	1140.0	1140.0	114.0
Treatment 114	1	1150.0	1150.0	115.0
Treatment 115	1	1160.0	1160.0	116.0
Treatment 116	1	1170.0	1170.0	117.0
Treatment 117	1	1180.0	1180.0	118.0
Treatment 118	1	1190.0	1190.0	119.0
Treatment 119	1	1200.0	1200.0	120.0
Treatment 120	1	1210.0	1210.0	121.0
Treatment 121	1	1220.0	1220.0	122.0
Treatment 122	1	1230.0	1230.0	123.0
Treatment 123	1	1240.0	1240.0	124.0
Treatment 124	1	1250.0	1250.0	125.0
Treatment 125	1	1260.0	1260.0	126.0
Treatment 126	1	1270.0	1270.0	127.0
Treatment 127	1	1280.0	1280.0	128.0
Treatment 128	1	1290.0	1290.0	129.0
Treatment 129	1	1300.0	1300.0	130.0
Treatment 130	1	1310.0	1310.0	131.0
Treatment 131	1	1320.0	1320.0	132.0
Treatment 132	1	1330.0	1330.0	133.0
Treatment 133	1	1340.0	1340.0	134.0
Treatment 134	1	1350.0	1350.0	135.0
Treatment 135	1	1360.0	1360.0	136.0
Treatment 136	1	1370.0	1370.0	137.0
Treatment 137	1	1380.0	1380.0	138.0
Treatment 138	1	1390.0	1390.0	139.0
Treatment 139	1	1400.0	1400.0	140.0
Treatment 140	1	1410.0	1410.0	141.0
Treatment 141	1	1420.0	1420.0	142.0
Treatment 142	1	1430.0	1430.0	143.0
Treatment 143	1	1440.0	1440.0	144.0
Treatment 144	1	1450.0	1450.0	145.0
Treatment 145	1	1460.0	1460.0	146.0
Treatment 146	1	1470.0	1470.0	147.0
Treatment 147	1	1480.0	1480.0	148.0
Treatment 148	1	1490.0	1490.0	149.0
Treatment 149	1	1500.0	1500.0	150.0
Treatment 150	1	1510.0	1510.0	151.0
Treatment 151	1	1520.0	1520.0	152.0
Treatment 152	1	1530.0	1530.0	153.0
Treatment 153	1	1540.0	1540.0	154.0
Treatment 154	1	1550.0	1550.0	155.0
Treatment 155	1	1560.0	1560.0	156.0
Treatment 156	1	1570.0	1570.0	157.0
Treatment 157	1	1580.0	1580.0	158.0
Treatment 158	1	1590.0	1590.0	159.0
Treatment 159	1	1600.0	1600.0	160.0
Treatment 160	1	1610.0	1610.0	161.0
Treatment 161	1	1620.0	1620.0	162.0
Treatment 162	1	1630.0	1630.0	163.0
Treatment 163	1	1640.0	1640.0	164.0
Treatment 164	1	1650.0	1650.0	165.0
Treatment 165	1	1660.0	1660.0	166.0
Treatment 166	1	1670.0	1670.0	167.0
Treatment 167	1	1680.0	1680.0	168.0
Treatment 168	1	1690.0	1690.0	169.0
Treatment 169	1	1700.0	1700.0	170.0
Treatment 170	1	1710.0	1710.0	171.0
Treatment 171	1	1720.0	1720.0	172.0
Treatment 172	1	1730.0	1730.0	173.0
Treatment 173	1	1740.0	1740.0	174.0
Treatment 174	1	1750.0	1750.0	175.0
Treatment 175	1	1760.0	1760.0	176.0
Treatment 176	1	1770.0	1770.0	177.0
Treatment 177	1	1780.0	1780.0	178.0
Treatment 178	1	1790.0	1790.0	179.0
Treatment 179	1	1800.0	1800.0	180.0
Treatment 180	1	1810.0	1810.0	181.0
Treatment 181	1	1820.0	1820.0	182.0
Treatment 182	1	1830.0	1830.0	183.0
Treatment 183	1	1840.0	1840.0	184.0
Treatment 184	1	1850.0	1850.0	185.0
Treatment 185	1	1860.0	1860.0	186.0
Treatment 186	1	1870.0	1870.0	187.0
Treatment 187	1	1880.0	1880.0	188.0
Treatment 188	1	1890.0	1890.0	189.0
Treatment 189	1	1900.0	1900.0	190.0
Treatment 190	1	1910.0	1910.0	191.0
Treatment 191	1	1920.0	1920.0	192.0
Treatment 192	1	1930.0	1930.0	193.0
Treatment 193	1	1940.0	1940.0	194.0
Treatment 194	1	1950.0	1950.0	195.0
Treatment 195	1	1960.0	1960.0	196.0
Treatment 196	1	1970.0	1970.0	197.0
Treatment 197	1	1980.0	1980.0	198.0
Treatment 198	1	1990.0	1990.0	199.0
Treatment 199	1	2000.0	2000.0	200.0
Treatment 200	1	2010.0	2010.0	201.0
Treatment 201	1	2020.0	2020.0	202.0
Treatment 202	1	2030.0	2030.0	203.0
Treatment 203	1	2040.0	2040.0	204.0
Treatment 204	1	2050.0	2050.0	205.0
Treatment 205	1	2060.0	2060.0	206.0
Treatment 206	1	2070.0	2070.0	207.0
Treatment 207	1	2080.0	2080.0	208.0
Treatment 208	1	2090.0	2090.0	209.0
Treatment 209	1	2100.0	2100.0	210.0
Treatment 210	1	2110.0	2110.0	211.0
Treatment 211	1	2120.0	2120.0	212.0
Treatment 212	1	2130.0	2130.0	213.0
Treatment 213	1	2140.0	2140.0	214.0
Treatment 214	1	2150.0	2150.0	215.0
Treatment 215	1	2160.0	2160.0	216.0
Treatment 216	1	2170.0	2170.0	217.0
Treatment 217	1	2180.0	2180.0	218.0
Treatment 218	1	2190.0	2190.0	219.0
Treatment 219	1	2200.0	2200.0	220.0
Treatment 220	1	2210.0	2210.0	221.0
Treatment 221	1	2220.0	2220.0	222.0
Treatment 222	1	2230.0	2230.0	223.0
Treatment 223	1	2240.0	2240.0	224.0
Treatment 224	1	2250.0	2250.0	225.0
Treatment 225	1	2260.0	2260.0	226.0
Treatment 226	1	2270.0	2270.0	227.0
Treatment 227	1	2280.0	2280.0	228.0
Treatment 228	1	2290.0	2290.0	229.0
Treatment 229	1	2300.0	2300.0	230.0
Treatment 230	1	2310.0	2310.0	231.0
Treatment 231	1	2320.0	2320.0	232.0
Treatment 232	1	23		

TABLE XV
MEANS, STANDARD DEVIATIONS, AND RANGE OF SIX
GROUPINGS OF DISTRICTS ON VARIABLE VII:
LEGAL REQUIREMENTS

Area	Mean	St. Dev.	Range	
			High	Low
Lethbridge area N=14	2.00	0.00	2	2
Edmonton area N=30	1.93	.25	2	1
City districts N= 4	2.00	0.00	2	2
Divisions and Counties N=23	2.00	0.00	2	2
Town and Rural districts N=17	1.88	.33	2	1
Total N=44	1.96	.21	2	1

There is no significant difference in means.

Section VII of the questionnaire, legal requirements. The differences that did exist were minimal.

Presented in Table XVI is a summary of responses that represent the total score on the instrument. The grand mean of 42.00 indicated that, on the average, twenty-two of the recommendations put forward in the questionnaire were not being followed in the districts

TABLE XVI

MEANS, STANDARD DEVIATIONS, AND RANGE OF SIX
GROUPINGS OF DISTRICTS ON VARIABLE VIII:
TOTAL SCORE ON QUESTIONNAIRE

Area	Mean	St. Dev.	Range	
			High	Low
Lethbridge area N=14	43.71	6.22	53	37
Edmonton area N=30	41.20	8.29	58	25
City districts N= 4	52.25 ^a	2.63	56	50
Divisions and Counties N=23	42.70	7.58	58	29
Town and Rural districts N=17	38.65	6.36	53	25
Total N=44	42.00	7.71	58	25

^aSignificantly different from the total at
.05 level.
Bracketed means are significantly different
from each other.

studied. There was not a marked difference from this grand mean in the Lethbridge or Edmonton areas. However, it was evident that city districts differ significantly from (a) divisions and counties, (b) town and rural districts, and (c) the total group in overall mean score on the instrument.

From the above discussion, two generalizations seemed to emerge. City districts practiced more of the suggested practices for economical purchasing than did most other classes of districts, and there was no significant difference at the .05 level of significance in the practices being carried out in the Lethbridge area and the Edmonton area. This was expected because city districts, and all types of independent districts, divisions and counties of varying size were all represented in each of the two groups.

III. CORRELATION OF VARIABLES

In order to arrive at some measure of the relationship between factors being studied, inter-correlations between eleven variables were calculated.

The assumptions underlying the use of the Pearson Correlation Coefficient were met. The scores were in the interval scale of measurement. Linearity of regression was assumed for variables I through VII, the subscores on the instrument. Scattergrams were prepared for variables VIII on XI, IX on XI, and X on XI, indicating that curvilinear regression did not appear to be present but that a tendency toward random distribution was present.

The first eight variables were the ones mentioned earlier, viz., the subscores and total score on the

instrument. Variable IX was the enrollment in each district studied. Variable X was the average number of credits offered in the high schools of the districts studied and variable XI was the cost per pupil in average daily attendance of instructional supplies computed according to the directions in Chapter II above.

Presented in Tables XVII to XIX are intercorrelations of these eleven variables for the six groups of districts previously described.

Presented in Table XVII are coefficients of correlation among the variables for fourteen districts in the Lethbridge area and thirty districts in the Edmonton area. The most frequently occurring statistically significant correlations at the .05 level of significance were found between variable VIII, total score, and variables I to VI, the subscores on the instrument. Variable VII, legal requirements, did not correlate significantly with any of the variables. This seemed to result from the uniform response to the item in all but two of the forty-four districts studied.

Two other pairs of statistically significant correlations at the .05 level of significance were discovered. For districts in both the Lethbridge and the Edmonton areas, variable VIII, total score on the instrument, correlated positively and significantly with

TABLE XVII

COEFFICIENTS OF CORRELATION BETWEEN PAIRS OF
VARIABLES FOR FOURTEEN DISTRICTS IN THE
LETHBRIDGE AREA AND THIRTY DISTRICTS
IN THE EDMONTON AREA

VARIABLES										
1	2	3	4	5	6	7	8	9	10	11
1	<u>49</u> <u>42</u>	-04 <u>50</u>	<u>47</u> <u>45</u>	21 27	05 12	00 -01	<u>68</u> <u>67</u>	00 <u>44</u>	-08 <u>38</u>	12 ^a -10 ^b
2		15 <u>36</u>	<u>54</u> <u>54</u>	-01 <u>36</u>	01 <u>52</u>	00 30	<u>66</u> <u>80</u>	46 <u>36</u>	44 26	13 ^a -13 ^b
3			08 <u>57</u>	-44 26	-05 15	00 -14	14 <u>63</u>	08 34	08 26	-34 ^a -10 ^b
4				35 <u>38</u>	37 34	00 -01	<u>81</u> <u>75</u>	<u>58</u> <u>21</u>	43 16	18 ^a -23 ^b
5					16 30	00 25	29 <u>56</u>	29 -09	21 -29	33 ^a -23 ^b
6						00 17	<u>59</u> <u>68</u>	42 20	34 -12	16 ^a 02 ^b
7							00 17	00 09	00 -08	00 ^a 01 ^b
8								<u>54</u> <u>39</u>	42 17	19 ^a -15 ^b
9									<u>91</u> <u>85</u>	26 ^a 05 ^b
10										22 ^a 12 ^b
11										

^ar for districts in the Lethbridge area.

r $\geq$.53 for significance at the .05 level.

^br for districts in the Edmonton area.

r $\geq$.36 for significance at the .05 level.

Decimal points have been omitted from this table.

variable IX, enrollment. Variable IX, enrollment, correlated positively and significantly with variable X, average number of credits offered in high schools of the districts studied. The correlation of variable VIII with variable X was not significant at the .05 level of significance. In addition, none of the variables correlated significantly with variable XI, the per pupil costs figure. In fact, these correlations clustered about zero, suggesting that variable XI, the per pupil expenditures, was randomly associated with all other variables studied.

Presented in Table XVIII are coefficients of correlation among variables for four city districts, twenty-three divisions and counties, and seventeen town and rural districts. The only pattern of consistently significant correlations at the .05 level of significance for this group seemed to occur between variable VIII, total score, and variables I to VI, the first six subscores on the instrument. Variable IX, enrollment, correlated significantly at the .05 level of significance with variable X, credits offered in divisions and counties and town and rural districts but not in the cities. Dividing the sample into groups that were similar in size and program offering seemed to mask effects that were revealed when a more heterogeneous group was examined.

TABLE XVIII

COEFFICIENTS OF CORRELATION BETWEEN PAIRS OF VARIABLES FOR
FOUR CITY DISTRICTS, TWENTY-THREE DIVISIONS AND COUNTIES,
AND SEVENTEEN TOWN AND RURAL DISTRICTS

	VARIABLES										
	1	2	3	4	5	6	7	8	9	10	11
1		00 <u>42</u> 36	90 <u>43</u> 15	-57 <u>51</u> 47	-41 39 35	-76 24 -09	00 00 05	74 <u>77</u> <u>49</u>	40 -23 -01	-22 -31 24	-33 ^a -12 ^b 20 ^c
2			00 33 06	00 40 45	00 28 46	00 <u>49</u> <u>07</u>	00 00 26	00 <u>71</u> <u>61</u>	00 24 -15	00 -16 05	00 ^a -05 ^b -17 ^c
3				-87 <u>44</u> <u>50</u>	-09 37 -29	-41 10 -04	00 00 -17	<u>96</u> <u>61</u> 32	72 -34 15	23 -43 23	02 ^a 10 ^b -52 ^c
4					-17 <u>51</u> 27	-09 37 15	00 00 -10	- <u>95</u> <u>75</u> <u>70</u>	- <u>95</u> -08 18	-62 -39 26	-29 ^a -16 ^b -13 ^c
5						50 <u>58</u> 05	00 00 43	17 <u>70</u> 41	08 -35 -11	80 -72 -04	<u>99</u> ^a -23 ^b 12 ^c
6							00 00 03	-18 <u>65</u> <u>65</u>	30 07 -51	69 -28 -53	50 ^a -08 ^b 03 ^c
7								00 00 16	00 00 -16	00 00 -33	00 ^a 00 ^b -06 ^c
8									81 -15 -31	49 -51 -17	28 ^a -13 ^b -11 ^c
9										64 <u>47</u> <u>87</u>	20 ^a 15 ^b 19 ^c
10											86 ^a 35 ^b 13 ^c
11											

^ar for 4 city districts, $r \geq .95$ for sig. at .05 level.

^br for 23 divisions and counties, $r \geq .41$ for sig. at .05 level.

^cr for 17 town and rural districts, $r \geq .48$ for sig. at .05 level.

Decimal points have been omitted from this table.

TABLE XIX
COEFFICIENTS OF CORRELATION BETWEEN PAIRS OF
VARIABLES FOR FORTY-FOUR DISTRICTS

VARIABLES										
1	2	3	4	5	6	7	8	9	10	11
1	<u>43</u>	<u>43</u>	<u>49</u>	24	07	03	<u>68</u>	<u>32</u>	23	-02
2		30	<u>53</u>	26	<u>36</u>	25	<u>75</u>	<u>31</u>	<u>32</u>	-03
3			<u>49</u>	11	07	-08	<u>55</u>	26	20	-17
4				<u>36</u>	<u>32</u>	02	<u>77</u>	18	23	-09
5					26	22	<u>49</u>	-06	-15	-05
6						12	<u>63</u>	20	03	07
7							17	07	-06	01
8								<u>35</u>	23	-04
9									<u>73</u>	06
10										16
11										

Decimal points have been omitted from this table. Underlined coefficients of correlation are significant at the .05 level. $r \geq .30$ for sig. at .05 level.

Presented in Table XIX are the coefficients of correlations at the .05 level of significance among the variables for all forty-four districts studied. The observations made in relation to Table XVII are repeated for this table. The most frequently occurring significant

correlations at the .05 level of significance were found between variable VIII, total score, and variables I to VI, the first six subscores on the instrument.

For the total sample, variable VIII, total score on the instrument, correlated positively and significantly at the .05 level of significance with variable IX, enrollment. Variable IX, enrollment, correlated positively and significantly with variable X, average number of credits offered in high schools. None of the variables correlated significantly with variable XI, the per pupil cost figure but seemed to cluster about zero. This again suggested that there was only a random relation between costs and all of the variables used in this study.

In order to examine the suggestion of randomness between variable XI, costs, and variable VIII, total score on the instrument, two similar analyses were performed. Initially, variable VIII, total score, was ranked in descending order of magnitude, matched with corresponding values of variable XI, costs, and split into quartiles. The mean for each quartile on each variable was then calculated. The four quartile means of variable VIII were tested for significant differences in means using analysis of variance. Significant difference was found between the mean of the fourth quartile and the mean of the first quartile. When the four quartile means

of variable XI, costs, were similarly tested, no significant differences were found. If there was a significant correlation between the two variables, consistent patterns of significant differences among matched quartile means were expected. Evidence was therefore provided which supported the earlier suggestion that the two variables were only randomly associated.

The indication of randomness was further tested by performing the same analysis in reverse order. Variable XI, costs, was ranked in descending order of magnitude, matched with corresponding values of variable VIII, total score, and split into quartiles. The mean for each quartile on each variable was calculated. The four quartile means of variable XI were tested for significant differences in means using analysis of variance. Significant differences were found among quartile means on variable XI. But when the four quartile means of variable VIII, total score, were similarly tested, no significant differences were found. Again support for the suggestion of a random association between the two variables was demonstrated.

To examine the indication that variable IX, enrollment, and variable X, number of credits taught in the high schools of the districts studied, were also only randomly associated with variable XI, per pupil costs,

partial r 's were calculated.

TABLE XX
PARTIAL CORRELATION COEFFICIENTS SHOWING THE
EFFECTS OF VARIABLES IX AND X ON THE
RELATIONSHIP BETWEEN VARIABLES
VIII AND XI

$r_{8, 11.9}$	-.07
$r_{8, 11.10}$	-.08
$r_{8, 11.9, 10}$	-.06

None of the above partials are significant.

Presented in Table XX are partial correlation coefficients that indicated the relationship between variables VIII and XI, total score and per pupil costs, when the effects of enrollment, extent of program, and the combined effects of enrollment and extent of program were statistically held constant. It seemed that total score on the instrument, enrollment, and extent of program were only randomly associated with per pupil costs, either separately or in combination.

Presented in Table XXI is a summary of the distribution of results obtained for variable IX, enrollment; variable X, credits taught; and variable XI, per pupil costs of instructional supplies in seven groupings of districts that were developed in the study. The first six

TABLE XXI

MEANS, STANDARD DEVIATIONS, AND RANGE OF SEVEN GROUPINGS OF DISTRICTS ON VARIABLE IX, ENROLLMENT; VARIABLE X, CREDITS OFFERED; VARIABLE XI, PER PUPIL COST OF INSTRUCTIONAL SUPPLIES

Area	mean	st. dev.	Range	
			high	low
Lethbridge area N=14	1892.5 179.1 \$7.35	1853.4 80.9 4.33	7237 441 17.00	196 108 .84 ^c
Edmonton area N=30	4661.2 178.9 \$7.35	11752.1 72.6 3.05	63323 472 13.41	187 93 1.81 ^c
City districts N= 4	23707.75 356.8 \$7.55	27791.1 122.9 1.36	63323 472 9.19	1924 207 6.44 ^c
Divisions and Counties N=23	2642.1 164.5 \$7.93	867.1 26.4 3.23	4898 243 17.00	1444 122 1.81 ^c
Town and Rural districts N=17	632.1 156.8 \$6.51	420.5 48.8 4.02	1441 198 13.76	187 93 .84 ^c
Total N=44	3780.5 179.0 \$7.34	9792.2 74.4 3.46	63323 472 17.00	187 93 .84 ^c
Restricted Sample ^d N=40	1799.9 158.8 \$7.29	1227.4 29.9 3.61	4898 243 17.00	187 93 .84 ^c

^aVariable IX, enrollment.

^bVariable X, average number of credits taught.

^cVariable XI, per pupil cost of instructional supplies.

^dTotal sample less Edmonton Public S.B. # 7,
Lethbridge S.D. # 51, Wetaskiwin S.D. # 264, and
Edmonton C.S. # 7.

groupings were the same ones previously examined. In these six groupings there was marked variation in results obtained on variables IX and X. They were far from being normally distributed. Variable XI, per pupil cost, however, did not differ significantly from group to group.

To compensate for the marked variation in variables IX and X, the seventh grouping, shown in Table XXI, was examined. This restricted sample was comprised of the total sample with the exception of Edmonton S.B. # 7, Edmonton C.S. # 7, Lethbridge S.D. # 51, and Wetaskiwin S.D. These districts were eliminated from the total to offset the effects that their high enrollments and/or extensive credit offerings had on variables IX and X in the total sample. It was thought that although normality of distribution was not required to compute correlations, analysis of a more nearly normal distribution might reveal significant trends. The elimination of the described four atypical districts made variable X normal and brought variable IX closer to normality as determined by the Chi-square Goodness of Fit test. As is seen from Table XXI, the mean for the restricted sample of forty districts was reduced for both variables IX and X while the mean for variable XI, per pupil costs, was altered only slightly. Intercorrelations for variables VIII through XI were computed on the basis of the restricted sample of forty

districts described. These are reported in Table XXII.

TABLE XXII
COEFFICIENTS OF CORRELATION AMONG VARIABLES
FOR FORTY SELECTED DISTRICTS

Variables				
	8	9	10	11
8		12	-19	-06
9			<u>51</u>	25
10				26
11				

$r \geq .31$ for significance at .05 level.
Decimal points have been omitted from this table.

Comparison of correlations for the restricted sample with similar determinations for the same variables in the total sample as shown in Table XIX revealed that the general pattern of correlations remained the same. Enrollment correlated significantly at the .05 level of significance with number of credits taught in high schools. None of the variables correlated at the .05 level of significance with variable XI, per pupil costs of instructional supplies. For the restricted sample, variable VIII did not correlate with variable IX as it did in the total sample. One can therefore conclude that

the departures from normality in variables IX and X in the total sample did not greatly affect the Pearson r 's and partials previously reported.

IV. DISCUSSION AND SUMMARY

The purpose of this study was to discover whether relationships existed among variables hypothesized as correlates of per pupil costs of instructional supplies in selected Alberta school systems. The findings can best be summarized by re-examining the sub-problems and hypotheses upon which the study was based.

1. Present purchasing practices in the school systems studied were generally not consistent with suggested practices outlined in the literature. On the instrument used to measure the quality of the purchasing function, which had a reliability coefficient of .85 and high intercorrelations between subscores and total score, the mean score was forty-two out of a possible score of sixty-four with standard deviation of 7.71 and a range of 33. All districts studied could adopt many more of the practices suggested.

2. This study indicated that at the .05 level of significance there was only a random relationship between per pupil costs of instructional supplies and the quality of the procurement function in the districts studied as

measured against procedures recommended in the literature.

3. This study indicated that there was only a random relationship between per pupil costs of instructional supplies and size of the school systems studied as measured by enrollment.

4. This study indicated that there was only a random relationship between per pupil costs of instructional supplies and scope of program as measured by average number of credits offered in the high schools of the districts studied.

5. The hypothesis that cost per pupil in average daily attendance varies as the scope of the high school program varies and inversely as both the size of the district and quality of the procurement function was not supported. Consequently, the individual hypotheses regarding relationships between costs and scope of program, costs and size of district, and costs and quality of the procurement function separately, were not supported.

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

I. CONCLUSIONS

The following conclusions may be drawn from this study.

1. The instrument may be a useful guide to districts that are in the process of reorganization of their purchasing function.

2. The legal position of many school purchasing agents had not been clearly defined with the result that both boards and agents may be liable individually or together in cases of dispute with suppliers over the validity of contracts. The courts would have to decide where liability resides in each particular case. This lack of clear definition of function may have occurred because boards have not generally consulted legal counsel in setting up their purchasing structure.

3. It was reported that selection of materials used for instructional purposes was controlled by professional educators.

4. Buying on bids was not universal. Only fifty-seven per cent of boards studied reported that they secure quotations before purchasing items. Since bid buying and

submission of quotations by suppliers had enabled larger boards to secure significant discounts on bulk purchases, it seemed valid to suggest that all boards conceivably could adopt these practices to their advantage.

5. Ordering and buying regularly-used items according to a calendar was not generally practiced.

6. While only one-fourth of the districts studied had investigated cooperative purchasing, widespread interest was reported in this procedure as a source of saving.

7. City districts generally conducted their purchasing operation more in accord with recommendations found in the literature than did other boards studied.

8. While most boards did not conduct tests and evaluations of materials purchased, there was widespread interest reported in the formation of a governmental agency which would test materials, develop specifications, and recommend sources of supply to the boards of the province.

9. Costs of instructional supplies evidenced only a random relationship to the other variables studied.

II. IMPLICATIONS

The hypotheses upon which this study was based must be rejected for the sample studied. Per pupil costs of

instructional supplies as reported to the Department of Education for forty-four districts and determined in the manner suggested by Knezevich and Fowlkes¹ appeared to be only randomly associated with the other variables studied.

Perhaps the instrument used, although it was consistent with the findings of Truax,² Brock,³ and Rhodes⁴ and despite its high reliability coefficient, did not measure those aspects of the procurement function that determined costs. What other aspects of procurement may be germane to cost determination were not apparent.

It seemed that the true explanation of indicated randomness may lie elsewhere. Since both scope of program and size of district did not correlate with costs, there was some suggestion that the reason for lack of hypothesized

¹Stephen J. Knezevich and John Guy Fowlkes, Business Management of Local School Systems, (New York: Harper and Brothers, 1960.) pp. 152-158.

²James N. Truax, "Implications for Cooperative Purchasing by Northern San Diego County School Districts," (unpublished Master's thesis, San Diego State College, San Diego, California, 1962.)

³Dale Eastes Brock, "Survey Instrument for Evaluation of the Economic-Efficiency of Public School Purchasing," (unpublished Doctoral Dissertation, Indiana University, Bloomington, Indiana, 1964.)

⁴Charles W. Rhodes, "Practices and Trends in Purchasing Instructional Supplies by Michigan Public School Districts," (unpublished Master's thesis, Michigan State University, Lansing, Michigan, 1964.)

correlation may have resided in the costs variable. Perhaps the assumption that there was at least some consensus among secretary/treasurers of the meaning of the term "instructional supplies" as was assumed at the outset of the study had no basis in fact. It may be that this figure in the financial report was merely used to balance the expenditures section. If this was true, unit cost analysis on the figures reported for costs of instructional supplies was meaningless.

Another explanation may be that costs were not being controlled in the districts studied. The low mean scores on the instrument indicated that many activities which experts have felt to be essential to economical purchasing were not being practiced. Improvement of the procurement function may bring costs into correspondence with variables of size and scope of program as was hypothesized.

An implied assumption in this study was that equivalence among districts in ascertaining the quantity and quality of supplies required per pupil exists. However, the fact that per pupil costs as reported varied from \$.84 to \$17.00 indicated that there was wide variability among districts in defining what for them was an adequate supply program. This variability in definition along with the decisions resulting from those definitions with regard to what will be purchased was a factor in cost determination

that was not studied but possibly affected per pupil costs of instructional supplies.

III. RECOMMENDATIONS

It is recommended that:

1. Boards and purchasing personnel be given the opportunity and be encouraged to become more familiar with standard purchasing practices through providing them with an appropriate purchasing handbook;

2. Study be given to the format of the yearly financial report with a view to achieving uniformity among districts in reporting expenditures in each category;

3. Boards be encouraged to establish purchasing pools so that they may receive the discounts for volume purchasing and reduction in unit freight costs that are now experienced by large city districts;

4. A governmental agency be established to test supplies, prepare standard specifications and recommend sources of supply to school boards.

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APPENDIX A

THE SAMPLE

THE SAMPLE

School Divisions

Bonnyville S.D. #46
 Cardston S.D. #2
 Edson S.D. #12
 Lac La Biche S.D. #51
 Lamont S.D. #18
 Willow Creek S.D. #28
 Pincher Creek S.D. #29
 Wainwright S.D. #32
 Westlock S.D. #37

Counties

County of Lac Ste. Anne #28
 County of Vulcan #2
 County of Warner #5
 County of Wetaskiwin #10
 County of Athabaska #12
 County of Barrhead #11
 County of Beaver #9
 County of Leduc #25
 County of Lethbridge #26
 County of St. Paul #19
 County of Strathcona #20
 County of Thorhild #7
 County of Two Hills #21
 County of Vermilion River #24

Independent Districts

Biggin Hill S.D. #5029¹
 Bonnyville S.D. #2665
 Bow Island C.S. #82
 Clandonald C.S. #29
 Coleman S.D. #1216
 Crowsnest Cons. S.D. #78
 Devon S.D. #4972
 Edmonton Public S.B. #7
 Edmonton C.S. #7
 Glen Avon P.S. #5
 Jasper S.D. #3063
 Lethbridge S.D. #51
 Lethbridge C.S. #59
 Picture Butte C.S. #79²
 St. Albert P.S. #6
 St. Michael's C.S. #18
 St. Paul S.D. #2228
 Stirling S.D. #647
 Swan Hills S.D. #5109
 Taber C.S. #54
 Thibault C.P. #35
 Vermilion C.S. #97
 Wainwright C.S. #31¹
 Wetaskiwin S.D. #264

¹ Returned incomplete questionnaires.

² Questionnaire returned late.

CHAPTER 10

1. The first part of the chapter discusses the importance of understanding the underlying structure of the data. This is particularly true for time series data, where the temporal relationship between observations is crucial for accurate modeling. The chapter then moves on to discuss various statistical methods for analyzing time series data, including autoregressive models, moving averages, and state space models. The final part of the chapter focuses on the practical application of these methods, using real-world examples to illustrate the concepts.

2. The second part of the chapter discusses the importance of understanding the underlying structure of the data. This is particularly true for time series data, where the temporal relationship between observations is crucial for accurate modeling. The chapter then moves on to discuss various statistical methods for analyzing time series data, including autoregressive models, moving averages, and state space models. The final part of the chapter focuses on the practical application of these methods, using real-world examples to illustrate the concepts.

Table 10.1	
Time Series Data	Autoregressive (AR)
Time Series Data	Moving Average (MA)
Time Series Data	State Space Models
Time Series Data	Autoregressive Moving Average (ARMA)
Time Series Data	Autoregressive Integrated Moving Average (ARIMA)
Time Series Data	State Space Models
Time Series Data	Autoregressive Moving Average (ARMA)
Time Series Data	Autoregressive Integrated Moving Average (ARIMA)
Time Series Data	State Space Models
Time Series Data	Autoregressive Moving Average (ARMA)
Time Series Data	Autoregressive Integrated Moving Average (ARIMA)
Time Series Data	State Space Models

1. The first part of the chapter discusses the importance of understanding the underlying structure of the data. This is particularly true for time series data, where the temporal relationship between observations is crucial for accurate modeling. The chapter then moves on to discuss various statistical methods for analyzing time series data, including autoregressive models, moving averages, and state space models. The final part of the chapter focuses on the practical application of these methods, using real-world examples to illustrate the concepts.

APPENDIX B

LETTER FROM THE ALBERTA SCHOOL TRUSTEES'
ASSOCIATION TO EACH PARTICIPATING DISTRICT

ALBERTA SCHOOL TRUSTEES' ASSOCIATION

Incorporated by Act of the Legislature of the Province of Alberta

10256 - 112 STREET, EDMONTON, ALBERTA

T. C. Weidenhamer,
General Secretary

Telephone: 488-7288

File: 6.11

April 14, 1966.

Dear Sir:

In the near future you will be receiving a questionnaire that deals with purchasing in your district. It has been prepared at the University of Alberta as part of a study analysing costs of instructional supplies in certain Alberta school systems.

Because the study will seek to determine ways by which boards may purchase supplies more economically, it is of interest to the A.S.T.A. We, therefore, encourage your cooperation with this project and suggest that full and accurate completion of the questionnaire will be of value in producing a document that may prove helpful to all of us.

Thank you.

Yours very truly,

T. C. Weidenhamer
General Secretary

APPENDIX C

THE QUESTIONNAIRE

Dear Sir:

The accompanying questionnaire has been prepared as part of a study designed to analyse the factors which affect per pupil costs of instructional supplies in Alberta. It would be appreciated if you would complete it fully, (an unanswered question will count as "No") have another person who knows the purchasing in your district check over it with you, and return it as soon as possible.

The following will assist you.

1. Circle Yes opposite every statement that describes what is usually done in your district.

2. Circle No opposite every statement that does NOT describe your usual practice.

3. The following definitions may be helpful:
Standardized supply list. A compilation of items deemed adequate and essential in the instructional program from which teachers and principals order supplies.
Specifications. A description of supplies or services setting forth in a clear and concise manner the characteristics of the item to be purchased and the conditions under which the purchase will be made.
Standardized order form. A form used by a person or department to order those supplies from the central warehouse which the district maintains in stock.
Requisition. A formal written request on a uniform form from a person or department in the school system for the purchase of supplies or equipment that is not listed on the standardized supply list.
Purchase order. A form which is sent to the supplier by the purchasing agent. It is the written contract made between the board and supplier to supply goods.
Purchasing agent. The person who buys for the district.

4. The percentage asked for in question five of the opinionnaire is critical to the study. An accurate determination of it will be appreciated. One approach may be to check the column entitled "Instructional Supplies" in your last Auditor's Financial Statement, Form EG-23-1700, and determine what part of the figure reported for Instructional Supplies is accounted for by freight and express bills from Edmonton (or Lethbridge) to your warehouse. Please do NOT include the cost of transportation within your district. It is the extra cost of transporting supplies from Edmonton (or Lethbridge) that is needed.

5. Your comments are invited with respect to any question but will be especially helpful with respect to the last five questions.

Thank you for your cooperation.

Yours truly,

Bryant L. Stringham

BLS:sd

QUESTIONNAIRE

_____ School District/ Division/ County # _____

Names of persons answering the questionnaire.

_____ Position _____
 _____ Position _____

I SCHOOL BOARD POLICY - ORGANIZATION AND PERSONNEL

- | | | |
|---|-----|----|
| 1. The school board has written policies regarding the purchasing function. | Yes | No |
| 2. All purchasing is under the direction of one individual. | Yes | No |
| 3. Board minutes or a policy handbook approved by the board contain the following information with regard to purchasing personnel: | | |
| a) name(s) of purchasing personnel. | Yes | No |
| b) formal title(s). (e.g. purchasing agent) | Yes | No |
| c) effective date of appointment. | Yes | No |
| d) limits under which they operate. | Yes | No |
| e) list of duties. | Yes | No |
| f) specific grant of power to act for the board (i.e. to negotiate with vendors, purchase, inspect, approve or reject for the board.) | Yes | No |
| 4. Purchasing personnel are directly responsible to the superintendent. | Yes | No |
| If not, to whom are they responsible? Board member, board, principal, Dept. Head, Supervisor, _____? | | |
| (underline) | | |
| 5. The board disapproves of individual board members making purchases for the board. | Yes | No |
| 6. The board refuses to pay for items charged to its account by teachers, principals, custodians or any other employees outside of the purchasing office. | Yes | No |
| 7. Purchase order forms and procedures have been approved by legal counsel. | Yes | No |

Total _____ 12

II PROCEDURES FOR DETERMINING REQUIREMENTS AND ESTABLISHING STANDARDS

113

1. Professional educators (teachers, principals, or supervisors, etc.) assist purchasing personnel in the selection of instructional supplies.	Yes	No
2. The record of previous years' needs are used as one basis for determining quantity of current orders.	Yes	No
3. A per pupil, per school, or per teacher unit is used as one basis for determining quantity of current orders.	Yes	No
4. Recurring needs are ordered according to a schedule (calendar) that has been drawn.	Yes	No
5. The board secures cheaper rates through bulk purchasing whenever possible.	Yes	No
6. The district maintains a standardized supply list.	Yes	No
7. The district maintains and uses a standardized order form.	Yes	No
8. Specifications for recurring purchases are maintained on items that are available in a wide range of qualities and prices.	Yes	No
9. Samples of goods are obtained from suppliers for preliminary examination before purchase is made when new items or change of brands is being considered.	Yes	No
10. The district uses requisition forms to initiate purchase of items that have not been supplied previously.	Yes	No
11. When needed, specifications for requisitioned items are prepared <u>before</u> orders are placed.	Yes	No
Total _____		11

III PROCEDURES FOR SELECTING SOURCES OF SUPPLY

1. A file of vendors is maintained.	Yes	No
2. Every effort is made to avoid favoritism of brands, firms, and salesmen in writing specifications and implementing procedures.	Yes	No
3. Interviews are afforded to salesmen who call at the purchasing office.	Yes	No
4. Purchasing personnel regularly visit suppliers premises.	Yes	No
5. The purchasing agent has access to trade journals, e.g., The Canadian Trade Index, Fraser's Canadian Trade Directory, School Progress, etc.	Yes	No

6.	Local firms are favored when price, quality and service are competitive.	Yes	No
7.	The board disapproves of employees accepting gifts or receiving discounts on goods bought from suppliers for their personal use.	Yes	No
8.	A continuous effort is made to place business with suppliers who have goods of adequate quality at the cheapest price for the purpose needed and who give the service required.	Yes	No
9.	The board regularly uses competitive bidding as a means of selecting sources of supply.	Yes	No
10.	Quotations are secured on all items before orders are placed.	Yes	No
Total _____			10

IV PROCEDURES FOR PROCESSING ORDERS

1.	A schedule specifying dates for receipt of regular orders from schools exists and is followed.	Yes	No
2.	A professional educator must approve all orders and requisitions for instructional supplies before they are ordered from suppliers.	Yes	No
3.	All purchase orders to vendors are prepared under the direction of one person.	Yes	No
4.	A planned system for supplying rush, emergency and experimental supplies to the schools is in operation.	Yes	No
5.	Originators of orders and requisitions in the schools are notified by the purchasing office when there is a delay in the processing or delivery of an order.	Yes	No
6.	Materials are ordinarily delivered F.O.B. destination.	Yes	No
Total _____			6

V PROCEDURES RELATING TO RECEIVING, INSPECTING, TESTING AND PAYMENT

1.	Supplies are received from suppliers and checked at a centralized distribution point(s).	Yes	No
2.	Supplies are checked for quantity against the purchase order and invoice when received.	Yes	No
3.	Supplies are checked for damage when received.	Yes	No
4.	Supplies are checked for quality against specifications when received.	Yes	No

5. The district continually conducts suitability and performance tests of materials being used.	Yes	No
6. Results of tests and evaluations made elsewhere are considered regularly.	Yes	No
7. The district secures discounts for prompt payment of accounts where applicable.	Yes	No
8. Vouchers are approved by the board or a finance committee of the board <u>before</u> payment is made.	Yes	No
9. Payment is always made <u>after</u> delivery.	Yes	No
Total _____		9

VI PROCEDURES RELATING TO STORAGE, INVENTORY AND DISTRIBUTION

1. On the average, storage facilities in schools are adequate.	Yes	No
2. Warehouse space is adequate.	Yes	No
3. Stock in warehouses and schools is insured.	Yes	No
4. Records are kept of all supplies distributed to individual schools.	Yes	No
5. Perpetual inventory records are maintained in the central storage area.	Yes	No
6. Perpetual inventory records are maintained in each school.	Yes	No
7. Inventory volume is regulated by use rate.	Yes	No
8. Inventory volume is kept low enough to prevent deterioration on the shelves.	Yes	No
9. Inventory volume is kept low enough to prevent obsolescence of stock.	Yes	No
10. Inventory volume is kept high enough to prevent complete consumption before a reorder can be delivered.	Yes	No
11. Stock rotation is practiced to promote first in-first out consumption.	Yes	No
12. Inventory controls are practiced to eliminate hoarding and reduce pilferage.	Yes	No
13. Only one person is authorized to release stock from school storerooms.	Yes	No
14. Only one person is authorized to release stock from the central distribution point(s).	Yes	No
Total _____		14

VII LEGAL REQUIREMENTS

116

- | | | |
|--|-----|----|
| 1. Provisions of Section 89, The Alberta School Act, Prohibited Transactions, are scrupulously followed. | Yes | No |
| 2. Regular use is made of the school district's right to purchase sales tax free. | Yes | No |

Total	_____	2
Grand Total	_____	64

OPINIONNAIRE

- | | | |
|--|-----|---------|
| 1. Would an Alberta agency to test supplies, prepare standard specifications and recommend sources of supply be of assistance to you? | Yes | No |
| 2. Has your board investigated cooperative purchasing of supplies with neighboring districts?
If so, which districts? _____ | Yes | No |
| For what type of items? _____ | | |
| 3. Do you believe your board would agree to purchase cooperatively with neighboring districts if savings could be effected thereby? | Yes | No |
| 4. Do you feel that changes could be made that would make your purchasing operation more economical without jeopardizing the educational program in your district? | Yes | No |
| 5. What percent of your yearly cost of Instructional Supplies do you calculate to be attributable to transportation costs between here and Edmonton/Lethbridge? | | _____ % |

APPENDIX D

FOLLOW - UP LETTER

13351 109 B Avenue
Edmonton, Alberta
May 3, 1966

Dear Sir:

During the past two weeks over half of the districts, divisions and counties participating in the purchasing practices study have returned questionnaires. Sincere appreciation is expressed to those who have responded.

Early tabulation of results indicates that a variety of practices are now being followed throughout the province. Widespread interest seems to exist in the desirability of establishing a central purchasing agency to advise boards on sources of supply, to conduct tests and prepare standard specifications. There seems to be interest in cooperative purchasing as a means of saving money. Where transportation from Lethbridge to Edmonton is a factor, the percentage of extra costs ranges from one to five per cent of total costs of instructional supplies annually.

So that a complete description of each area can be prepared, it is necessary that questionnaires be received from all participating units. Undoubtedly the pressure of work following the Easter recess has delayed some replies, but it would be appreciated if those districts which have not yet responded would do so now. If there are any questions that you would like to have answered with respect to the study, please call me collect at 454-2510 any evening.

Thank you for your cooperation.

Yours truly,

B. L. Stringham



B29858